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Preferred Mentoring Characteristics and Doctoral Students' Research Self-Efficacy

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The University of Southern Mississippi

PREFERRED MENTORING CHARACTERISTCS AND DOCTORAL STUDENTS' RESEARCH SELF-EFFICACY

by

Ashley Elizabeth Johnston

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

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ABSTRACT

PREFERRED MENTORING CHARACTERISTICS AND

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Mentoring relationships, even though essential to all aspects of one's life, are an important part of the educational experience. Levinson (1978) found that it was the most important relationship one could have and vital to those in the early adulthood stage of development. Furthermore, graduate students seek to become better researchers; therefore, research skill development is essential to the graduate school experience. The ability to develop these skills can aid in the ability to identify oneself as a researcher. Using Levinson's adult development theory and Markus and Nurius' possible selves theory as the theoretical framework, the goal of this study was to explore the relationship between mentoring preferences and student skill development, as measured by research self-efficacy. Specifically, the study sought to understand how mentoring characteristics, both preferred and actual, impact influence research self-efficacy of doctoral students.

Doctoral students (N= 125) participated in a study where two instruments, the *Ideal Mentor Scale* (Rose, 2003) and the *Self-Efficacy in Research Measure* (Phillips & Russel, 1994), were used to examine mentoring characteristics and research self-efficacy. Statistical analyses included a confirmatory factor analysis of the *IMS,* multivariate analysis of variance, and independent t-tests to test for statistical differences. Findings of this study showed that preferred mentoring characteristics do in fact make a difference in research self-efficacy. Those that prefer a mentoring style centered on Rose's concept of

Integrity were slightly more confident in being able to carry out research-oriented tasks than those that preferred a mentoring style centered on Rose's concept of Guidance. No doctoral student in this study preferred a mentoring style centered on Rose's concept of Relationship. Furthermore, having prior mentoring experiences makes a difference in how much students value the mentoring tasks associated with Rose's concept of Guidance.

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A Dissertation
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DEDICATION

To my parents, I honestly cannot thank you enough for all the opportunities you have afforded me. This was, by far, the most challenging task I have ever set out to accomplish, and I could not have done this without your support or encouragement. Thank you for instilling in me a sound work ethic and the value of an education.

To my grandparents, thank you for showing me what it means to work hard. You are my true mentors in life, and if I become at least half the people you are, I know that I will have truly given it my all.

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To everyone else who has supported me along the way, family and friends, thank you. You have impacted my life simply through your presence, and I am completely overwhelmed by your positive thoughts, prayers and encouragement.

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CHAPTER I

INTRODUCTION

Overview

The characteristics of graduate students in higher education today have evolved dramatically over the years. In simply comparing the numbers of graduate students now enrolled, one can see how the decision to obtain a higher education has become more popular among students. According to the National Center for Education Statistics (Snyder & Dillow, 2011), about 1.6 million students were enrolled in graduate education in the late 1970s and early 1980s. That number increased approximately 73% from 1985 to 2010, and there are now an estimated 2.9 million graduate students enrolled. Furthermore, it is projected that by 2021 the number of enrolled graduate students will reach 3.5 million. As the number of students seeking graduate education increases, the needs and demands of the students are changing as well (Snyder & Dillow, 2011). Higher education educators and administrators are tasked with meeting these evolving needs. One way to do so is through the development of mentoring relationships.

Despite the overwhelming amount of research on the topic, mentoring is a concept that is hard to define. Regardless, it provides students the ability to make meaningful connections with faculty, staff, and peers. Mentoring encompasses many different descriptions and definitions based on the area in which it is described. Merriam (1983) comments, "Mentoring appears to mean one thing to developmental psychologists, another thing to business people, and a third thing to those in academic settings" (p. 169). The most basic conceptualization of mentoring has existed in literature dating all the way back to the 1600s. Homer's *Odyssey* introduces the concept

through a guardian, Mentor, who is a medium for Athena, known as the goddess of wisdom. Essentially, the concept of Mentor, combined with Athena's expertise and characteristics, creates the most basic definition for a mentor - guardian and bearer of wisdom (Galbraith & Cohen, 1995).

Levinson (1978) was one of the first researchers to pioneer interest in mentoring through his work on adult development. In his work, he identifies a mentoring relationship as "one of the most complex, and developmentally important, a man [*sic*] can have in early adulthood" (p. 97). Levinson explains this concept "not in terms of formal roles but in terms of the character of the relationship and the functions it serves" (p. 98). This concept provides the foundation of the theoretical lens through which this study was based. In this capacity, mentors facilitated the "dream" of the mentee, and Levinson's work reiterates the importance of such a task and relationship. Furthermore, Markus and Nurius (1986) expanded on the dream concept to include the idea that one establishes possible idealizations of the self. These "possible selves" encompass self-awareness, which is key to any type of personal development. Combined with Levinson's work, Markus and Nurius's theory completes the theoretical lens for this study.

Crisp and Cruz (2008) analyzed research from the past two decades and have concluded that mentoring can be interpreted in several different ways, which contributed to the inability to distill a single definition. Because of the complexity of the topic, Crisp and Cruz identified major themes that emerged about the concept of mentoring. The first theme is that mentoring provides an opportunity for students to grow, both personally and professionally. Graduate students are working toward accomplishment by simply progressing toward degree completion. Mentoring fosters that drive for accomplishment

as a source of motivation. The second theme is that mentoring often occurs in many dimensions - professional, psychological, interpersonal, etc. Graduate students are encountering many different situations throughout their programs, and mentoring can serve as a guide for any situation. Finally, the third theme is that mentoring is a personal experience and a reciprocal process. Miller (2002) expanded upon the third theme that mentoring is a personal experience to provide further insight. He argues that because mentoring is a contract between the mentor and mentee, the personal experience aspect is why mentoring is so hard to define. Everyone experiences it in a different way, with different outcomes. Both mentors and mentees benefit from the process, as both are participating in the experience.

In higher education, much focus has been on the professor/student relationship (Galbraith & Cohen, 1995) due to the increasing interest in student development. A mentor takes on many roles, including sponsor, coach, advisor, and role model. Campbell and Campbell (1997) regard this partnership simply as the person with experience guiding a person (student) with less experience in order to provide the tools and resources for success. It is a partnership that is adapted from historical apprentice concepts.

Mentoring exists on all different levels for both students and faculty, and in both natural and structured forms (also known as formal mentoring). Miller (2002) explains that "natural mentoring occurs incidentally in a variety of life settings" (p. 25), whereas structured (formal) mentoring is created using "programmes with clear objectives, where mentors and mentees are matched using formal processes" (p. 25). It is not evident in research if natural mentoring is more valuable than structured form of mentoring due to

little research regarding natural mentoring relationships. Program assessment provides concrete support for institution initiatives, which may provide a basis for more research on structured or formal mentoring. Either way, both informal and formal mentoring exist as avenues for relationship building and student support. These programs are defined based on the characteristics of mentor/protégé interactions, which further complicates identifying a common definition for mentoring.

Another form of mentoring often found in education is peer mentoring. This form of mentoring relationship is often seen as successful because there is an elimination of status differences, and students can pull from their own recent experiences (Hall & Jaugietis, 2011). Howard (2010) further suggests that both groups actually benefit from the student-to-student interaction, thus again confirming the reciprocal relationship theme. In Howard's experience, student mentors gain valuable life experience to assist with career aspirations while student mentees are able to gain insight from someone who was once in their place.

Mentoring relationships are versatile, and can often be used as a support system or agent for research development, thus allowing graduate students to come to terms with identifying themselves as researchers (Hall & Burns, 2009). The need to develop more confident researchers is becoming more valued in higher education. Niemczyk (2013) describes graduate students as "the next generation of researchers and scholars who will direct the future of universities" (p. 51). If this description is true, universities will want to make sure they invest in quality training for their students' futures, as well as the future of the university. In order for graduate students to develop into confident researchers, they must be able to engage in research experiences throughout their

graduate education (Walker, 2008). Coryell, Wagner, Clark, and Stuessy (2011) suggest that graduate students experience a certain level of anxiety, which can influence their ability to participate in such research opportunities. As students learn to become researchers, their anxiety is brought on by several uncertainties, including identifying the role in research, the learning process, research ability, and analyzing legitimacy of research. This anxiety suggests that graduate students not only go through a new educational experience, but "a novice researcher must grapple with a new identity" (Coryell, Wagner, Clark, & Stuessy., 2011, p. 6). Walker (2008) suggests that successful students learn to ask questions and have the ability to answer those questions in a scholarly manner. If students struggle with these particular abilities or find themselves making mistakes, a proper support system can lead to teachable moments and learning opportunities. Regardless of mentoring type, it is a critical aspect of graduate student education, and the connection to researcher identity development, as expressed by self-efficacy in research-oriented tasks, should be more heavily explored (Hall & Burns, 2009). The need for further exploration into this area provides the foundation for the direction of this particular study.

Statement of the Problem

Most research on mentoring graduate students expresses the importance of such a practice, as well as how valuable it can be to the overall graduate school experience. It is vital for graduate students and their faculty to foster these relationships, which allow for personal accomplishment, professional growth, and interpersonal skill development. Even more so, mentoring relationships provide opportunities for research skill development.

Rose (2000) found that graduate students identified with specific mentoring styles based on their preferred mentoring characteristics. These styles were characterized by three subscales including relationship, guidance, and integrity. The study asked graduate students to evaluate statements regarding mentoring characteristics and rate them on importance as if they were being mentored by the "ideal" mentor. These preferences could provide insight into students' expectations about their graduate school mentoring experience and graduate student development. More research is needed to explore how these preferences could specifically aid in research skill development, as it is an important developmental process for all graduate students. Furthermore, these experiences could hold valuable implications for mentoring preferences and relationship development, which can include both personal and professional development as well as researcher identity development.

Purpose of Research

Researchers have found that mentoring relationships are a vital component to one's own development (Levinson, 1978) and that graduate students have ideal mentoring characteristics that they look for when forming mentoring relationships (Rose, 2003). Research also tells us that graduate students embark on a new professional and personal developmental journey that can be difficult to maneuver without the help of a mentor (Bieber & Worley, 2006). Unfortunately, research does not provide evidence in how mentoring characteristics can aid in the developmental journey, nor does it provide evidence on how mentoring experiences influence attitudes toward research. The purpose of this research was to determine the role mentoring characteristics play in the research development of graduate students. Specifically, the study attempted to

determine the relationship between mentoring characteristics and research self-efficacy. Further, the study explored ways in which students' levels of research self-efficacy differ based on mentoring experiences and preferred mentoring preferences as well as the way in which students' satisfaction with current mentoring relationship differ based on mentoring characteristics.

Research Questions

The following questions formed the basis for this study:

1. Is there a difference in students' preferred mentoring characteristics for those who have reported having prior mentoring experiences, and those who had not reported having prior mentoring experiences?
2. Is there a difference in students' level of research self-efficacy for those who have had prior mentoring experiences, and those who had not reported having prior mentoring experiences?
3. Is there a difference in students' satisfaction with current mentoring relationship for those who have reported having prior mentoring experiences, and those who had not reported having prior mentoring experiences?
4. Is there a difference in students' satisfaction with current mentoring relationship for those who are enrolled in graduate school full-time and those who are enrolled part-time?
5. Is there a difference in students' level of research self-efficacy based on preferred mentoring style?
6. Is there a difference in students' satisfaction with current mentoring relationship based on preferred mentoring style?

Justification

Various studies and literature have established that mentoring is an important component of an education experience (Anderson & Shannon, 1988; Luna & Cullen, 1998; Roberts, Kavussanu, & Sprague, 2001; Rose, 2003). This particular study further justified the need for mentoring and indicated how it can influence mentors and mentees, as well as the institution. The findings provided graduate students with more knowledge about mentoring concepts in graduate school as a resource for support and motivation toward research. Faculty and staff may benefit from this study as it presented important implications for future mentoring efforts with graduate students, or even programming aspects of mentoring in graduate school. The study also shed light on a relationship between preferred mentoring styles and the relationship to research self-efficacy.

Past mentoring experiences are valuable to both graduate students and faculty as they provide important outcomes in personal and professional development (Hunt & Michael, 1983). First, they have influenced a student's attitudes toward mentoring relationships, both positively and negatively. If a student had a successful mentoring experience in the past, he or she is likely prone to continue that relationship, or find a relationship similar to it. If a student had a negative experience, he or she is likely to have negative feelings toward continuing mentoring relationships, or may be more discerning in choosing future mentors. Either way, past mentoring experiences allow a student to have a benchmark to which he or she can compare future mentoring efforts. Secondly, previous mentoring experiences provide a basis for future mentoring efforts. For instance, if an institution has several cases of bad mentoring experiences, it is likely they would no longer be in favor of that type of educational support. If an institution had

positive and/or successful mentoring experiences, they may provide the best practices for other institutions and become a leading example in mentoring efforts.

Examining relationships of past mentoring experiences to specific components of the graduate school experience enhanced the knowledge of how best to assist graduate students toward degree completion. With these findings, administrators can be more knowledgeable of the graduate students in particular programs, and can successfully incorporate mentoring efforts that would be both strategic and grounded in empirical research. Rose (2005) suggested that this insight allows for more variables to be factored into ideal mentor selection and provides a wider range of predictors for mentoring style preference. In her opinion, it is a more sophisticated variable that provides researchers a deeper understanding of mentoring and contribute to theory development.

Finally, while this study added to current knowledge about mentoring in graduate school, by focusing on particular variables, it allowed for a deeper understanding of how graduate students are truly influenced by mentoring relationships and how those mentoring relationships fostered research skill development. If students are taking on a new identity, there is a need to understand how mentoring influences graduate student attitudes toward research. As Hunt and Michael (1983) discuss in their mentoring model, mentoring is a necessary tool for career training. Since graduate students are essentially training to gain further knowledge for a profession, mentoring is an essential component in the graduate school experience. Further exploration into experience and attitudes was needed as students develop into researchers. This study provided results to better understand that process.

Definition of Terms

The following were a list of terms specific to this study:

Mentor – a more experienced person who is sought out to guide, develop, or foster skill development in the form of a mentoring relationship; serves as supporter, encourager, and/or motivator (Eby, Rhodes, & Allen, 2007).

Mentee – a less experienced person who is currently pursuing a graduate degree; on the receiving end of guidance in a mentoring relationship (also may be referred to as a protégé) (Eby et al., 2007).

Mentoring Relationship – relationship between a mentor and protégé that fosters personal, professional, interpersonal, and/or research skill development (Moore & Amey, 1988; Jacobi, 1991).

Past Mentoring Experience – any mentoring experience that occurred prior to current graduate school enrollment.

Research Self-Efficacy – protégé's belief in her or her ability to perform an aspect of research, task associated with research, or the research process (Kahn & Scott, 1997; Forester, Kahn, & Hesson-McInnis, 2004).

Identity – a construct that is fluid and continuously re-examined through multilayered lenses, including sociocultural and anthropological, to define the self (Hall & Burns, 2009).

Delimitations

This study had several delimitations. Due to the nature of emphasis on research skill development, the study limited it to students pursuing a doctoral level degree. This

study focused on protégé aspects of the mentoring relationship and therefore delimited any aspect of the mentor side of the relationship.

Assumptions

The following assumptions were used in the course of this study:

1. Each participant was enrolled in a doctoral level program at the time of response.
2. All participants responded to the questionnaires with complete honesty and unbiased opinion.
3. All participants clearly understood the directions of each survey instrument and interpreted questions correctly.

CHAPTER II

REVIEW OF RELEVANT LITERATURE

Theoretical Foundations

In order to understand the importance of mentoring relationships to graduate students and the purpose of this research, one must first understand the theoretical concepts and foundations upon which mentoring is based.

Theory of Adult Development

Daniel Levinson (1978) is often seen as one of the first researchers to contribute theory to mentoring research through his theory on adult development. In his book, *Seasons of a Man's Life* (1978) and later, *Seasons of a Woman's Life* (1996), he explored a developmental approach to adulthood through a psychological perspective with sociological influences. He used the works of Freud, Jung, and Erikson as inspiration, and his driving force for this approach was based on the success of developmental methods to understanding childhood and adolescence. This type of approach led to groundbreaking research in human development and growth. Much like Jung and Erikson, Levinson used a sequential model of development, which led researchers into uncharted territory of exploring the life structure.

In the exploration of the life cycle, Levinson found that men went through some type of journey, and each life cycle consisted of several seasons. These seasons, otherwise known as periods or stages, created stability within the cycle. A typical life cycle consisted of four major eras, which last approximately 20 to 25 years. The four major eras, according to Levinson (1978), include:

1. Childhood and Adolescence: age 0-22
2. Early Adulthood: age 17-45
3. Middle Adulthood: age 40-65
4. Late Adulthood: age 60-? (p. 18).

Eras often overlap due to the incorporation of transitional periods that move adults from one era to the next.

For this particular study, the focus is on the Early Adulthood era. This era includes four developmental periods: Early Adult Transition, Entering the Adult World, Age 30 Transition, and Settling Down (Levinson, 1978, p. 56). Three of these developmental periods come together for the Novice Phase. Levinson felt that this phase was a critical component of adult development, and together, these developmental periods helped ease one into adulthood. It is here that a man (or woman) will "emerge from adolescence, find his place in adult society, and commit himself to a more stable life" (Levinson, 1978, p. 71). The newly established adult begins to create a life structure that will last and be acceptable.

The Novice Phase includes four major life tasks that give this era shape and course. They are vital to the overall journey, and future eras build upon what is established as well as what disappoints. Levinson identified the following as the four major tasks:

1. Forming a dream and giving it a place in the life structure
2. Forming mentoring relationships
3. Forming an occupation
4. Forming love relationships, marriage and family (Levinson, 1978, p. 90).

The focus here will be on the first two major tasks, as they help create a foundation for this study.

Levinson's main concept of a mentoring relationship is slightly outdated, as it only focused on males, but the underlying concepts on which mentoring relationships are based can be extended to all adults. The mentor is primarily an older person who has more experience than the chosen protégé. He takes on several roles, including teacher, advisor, sponsor, counselor, etc., and Levinson (1978) describes the relationship as such:

> The mentor relationship is one of the most complex, and developmentally important, a man [*sic*] can have in early adulthood . . . No word currently in use is adequate to convey the nature of the relationship we have in mind here . . . Mentoring is defined not in terms of formal roles, but in terms of the character of the relationship and the functions it serves. (pp. 97-98)

The mentor holds great power in the relationship, appearing to be an authoritative figure, but fosters the development of autonomy for the protégé. While most mentoring relationships do not fit the ideal one described by Levinson, it is the purpose of current research to define what is ideal for graduate students. According to Levinson (1978), "mentoring is not a simple, all-or-none matter" (p. 100). It cannot simply be categorized or compartmentalized. However, Levinson's research, although biased by a male-oriented approach, sets a foundation for the importance of mentoring relationships. His work has been expanded upon to encompass more practical applications. As Levinson (1978) provided a structural foundation for mentoring, researchers have continued to expand upon the knowledge of mentoring efforts, implications, and components.

Levinson (1978) also expressed the importance of forming a dream during this phase. The Dream is not a philosophical approach to achieving goals but instead a crucial component to forming an identity in the adult world. As a person explores interests and makes choices, he or she also forms a notion of who he or she aspires to become. This is the Dream, more grounded than a fantasy, but less structured than a well-thought through plan. This part of the Novice phase is very delicate and must be handled with extreme care. Without establishing the Dream or taking steps to fulfill the Dream, a person may often find him/herself in conflict in future eras, without personal fulfillment or resolution.

Possible Selves Theory

Levinson's "The Dream" concept can be loosely connected to more recent work conducted by Markus and Nurius (1986). In their work, they established that individuals identify types of selves in the pursuit of self-awareness and personal development. This work established Possible Selves Theory, in which three selves are explored, including *expected selves, hoped-for selves,* and *feared selves (*Benishek & Chessler, 2005; Markus & Nurius, 1986). The expected self is what is realistic. Individuals think about what they can or will become. The hoped-for self is an aspiration or the idealistic form of the self. Individuals think about what they would like to become. Finally, the feared self is the least desirable self. Individuals think about what they are afraid of becoming. As Levinson (1978) noted that adulthood is the time to establish a stable life structure, Markus and Kunda (1986) found that as individuals find aspects of their lives with which they are disappointed, they use possible selves to motivate restructure. The framework provides the lens for this particular study, as we focus on how mentoring relationships aid

in skill development. Graduate students often enter their programs with goals or dreams in mind, and mentoring relationships can help foster that journey. With the assistance and guidance of their ideal mentor, it is possible for graduate students to aspire to their ideal selves (Benishek & Chessler, 2005).

Together, the work of both Levinson and Markus and Nurius create a unique lens through which this study is established and viewed. Mentoring relationships are a vital part of graduate education and can often help graduate students through their own establishment of a stable life structure. The interaction with someone more established in the world can lay a path to achieving the hoped-for self, but this interaction can definitely lead to sustaining the expected self. A mismatched mentoring relationship can create detours in a life journey and possibly contribute to a realistic development of the feared self.

Defining Mentoring

A common criticism found in the literature is that mentoring is a concept that is hard to define (Anderson & Shannon, 1988; Eby et al., 2007; Lyons, 1990). Critics attribute this to the lack of theoretical-based research on mentoring (Johnson, Rose, & Schlosser, 2007), including Anderson and Shannon (1988) who expand upon Levinson's foundation to find that research on mentoring has failed to convey an adequate definition. Regardless, lack of a universal definition has not deterred production of further research. Mentoring is often discussed in terms of functions, such as "teaching, sponsoring, encouraging, counseling, and befriending," (p. 40) which provide various behaviors upon which mentors should base their practices, and provide sound mentoring experiences for protégés (Anderson & Shannon, 1988).

While many words are used interchangeably to describe mentors, Baker and Griffin (2010) explored the difference between common ones, such as advisor, mentor, and developer. Advisors specifically aid in academic matters – rules and regulations set forth by an institution, such as degree progress, course schedules, or degree requirements. The function of advisement is task-oriented. In contrast, the function of a mentoring relationship requires interaction and often emotional commitment. Finally, developers take the mentor role a step further and "engage in knowledge development, information sharing, and support as students set and achieve goals" (p. 5). The focus here is on future outcomes rather than just emotional commitment.

Lechuga (2011) defined mentoring by using three descriptors to characterize faculty-student mentoring relationships: allies, ambassadors, and master teachers. As allies, faculty focused on the supportive environment for which graduate students needed to be successful. As ambassadors, faculty served as a guide to integrating graduate students into academia. It is through this role that faculty "imbued a sense of responsibility upon their graduate students to engage in their professional and career growth" (p. 768). Finally, as master teachers, faculty took on apprentice-like relationships with their students. It is through this type of supervisory role that faculty also concentrated on the reciprocity of mentoring relationships. They were able to learn from their students as their students learned from them. In a thorough review of literature, Crisp and Cruz (2008) attribute the lack of structured definitions in the literature to the fact that mentoring is often subjective and situational. Mentoring does not fit into one box or the other, but instead encompasses a holistic experience.

Roberts, Kavussanu, and Sprague (2001) found that mentoring is a poorly understood construct because mentoring is perceived in different ways. In regard to mentoring as a function in graduate student training, there is a need for more quantitative studies to help understand the mentoring process. Even more so, understanding how mentoring functions in a research climate is valuable to institutions of higher learning.

The literature suggests that more researchers are beginning to understand the need to produce research that helps understand mentoring in different contexts. It will be vital for researchers to continue efforts on universal definitions of mentoring, but this challenge will be difficult to overcome as long as mentoring remains a subjective process.

Models of Mentoring

Kram's Model of Mentoring

The closest research has come to "defining" mentoring is to identify the life cycle of mentoring relationships. Kram (1983) further explored the work of Levinson in adult development and echoed his sentiments on how mentoring relationships can significantly enhance integration into the adult world. She established a mentoring model that focused on the development of functions, and she found that individuals progress though four major phases: initiation, cultivation, separation, and redefinition (Kram, 1983). In the initiation phase, a mentoring relationship is established. One seeks to be supported and cared for, as well as requires guidance on how to effectively maneuver the organization. The cultivation phase is when young professionals are tested by reality. Challenges create opportunities for increased competency and professional development. Senior mentors often begin to feel a sense of satisfaction in the relationship as they witness the growth of their young mentees. This phase may also reveal the shortcomings of a

mentoring relationship. Mentees may find that their relationship may not be meeting expectations or they have yet to find their ideal match to help them grow into the professional they want to be. The separation phase includes feelings of independence, anxiety, autonomy, and, sometimes, turmoil. Mentees often find themselves without the guidance and support they once had and must adjust to the new setting. Mentors find themselves having to emotionally separate from the relationship but can often feel pride and satisfaction in the person they have helped develop. If the separation phase occurs at an unnatural time, both the mentor and mentee may walk away with unresolved feelings. Finally, the last phase is the redefinition phase. Both mentors and mentees find they no longer need the mentoring relationship that was once established, and they find themselves in a different type of relationship: friendship. This relationship continues to be one of support and respect, but now both mentors and mentees feel a sense of gratitude. According to Kram, "the redefinition phase is, finally, evidence of changes that have occurred in both individuals" (p. 621).

Hunt and Michael's Model for Career Training and Development

Hunt and Michael (1983), in their effort to understand mentoring for career development, provided a conceptual model that focuses on five important components of mentoring relationships. Through their model, they provided a framework for which mentoring relationships are vital to career development, which includes personal and professional growth. The four components included in this framework are outcomes of mentoring, contextual factors that affect mentoring, mentoring characteristics for mentors and protégés, and stages of mentoring relationships. It is through the fourth component, stages of mentoring relationships, where the researchers really examined how students

and mentors grow. They explore how a student goes from initially selecting a mentor, to becoming comfortable in his or her role as a protégé, to seeking individuality, and finally to becoming empowered. This cycle allows for students to experience what Hunt and Michael felt is a complete mentoring relationship.

Anderson and Shannon's Conceptualization of Mentoring

Anderson and Shannon (1988) created a mentoring model which included four components. These components included defining the relationship, exploring mentoring functions, examining the context of the relationship, and identifying the mentor's disposition. This type of model was proposed due to lack of conceptual frameworks to explore mentoring functions, and it was created based on the following foundation:

> [Mentoring is] a nurturing process in which a more skilled or more experienced person, serving as a role model, teaches, sponsors, encourages, counsels, and befriends a less skilled or less experienced person for the purpose of promoting the latter's professional and/or personal development. Mentoring functions are carried out within the context of an ongoing, caring relationship between the mentor and protégé. (p. 40)

Each mentoring function is defined by a set of specific behaviors exhibited by a mentor.

Teaching. The function of teaching includes actions one would expect of a teacher. Mentors model the behavior they want their protégés to learn and eventually exhibit. They are expected to inform mentees on practices that will be expected of them throughout their graduate school experience, and they confirm and/or disconfirm information for mentees. Finally, they prescribe and question their mentees so that mentees learn to think critically and become confident in their newly learned skills.

Sponsoring. The function of sponsoring includes behaviors that appeal to the emotional aspects of a mentoring relationship. Mentors are expected to protect their mentees and provide support. Mentors are also expected to promote mentees. An example of this might include helping with career advancement or professional development.

Encouraging. The function of encouraging gives mentors an opportunity to take on the role of a coach. Mentors affirm and inspire mentees as source of motivation. They also challenge mentees, which can provide encouragement for becoming better graduate students and researchers.

Counseling. The function of counseling includes behaviors that allow mentors to become problem solvers. Mentors should be willing to listen and probe mentees to get to the root of an obstacle. Mentors should also clarify and advise on situations or information that may not be clear to the mentee.

Befriending. The last function, befriending, is one of which mentors should have a clear understanding. While mentors should be able to have clear boundaries set for the mentoring relationships, they should take on a friend role in order to show mentees that they are accepting and can relate to the experience.

All five functions work together within the context of mentoring activities, such as observations, providing feedback, giving support when necessary, etc. Finally, the dispositions identified as most essential include opening oneself to the mentee and showing the mentee that one cares (Anderson & Shannon, 1988).

The Mentoring Environment

Mentoring research is often categorized by environmental context. Lyons (1990) suggests that there are common dimensions that exist in a mentoring relationship, but they often differ based on the setting. Two of those common settings include the workplace and education.

Mentoring in the Workplace

Career-oriented mentoring is often critical to employees early in their job experience. It allows young employees to gain confidence in the work environment as well as the ability to identify themselves as working professionals (Eby et al., 2007). Hunt and Michael (1983) also found that mentoring is vital to the training and development of a young professional (Hunt & Michael, 1983; Jennings, 1971; Roche, 1979,). Organizations often create formalized mentoring programs which are sometimes used to foster career success (Stumpf & London, 1981). Noe (1988) analyzed specifically how mentoring can facilitate career advancement for women. In the call for more research, Noe suggested that women experience a sense of anxiety and the establishment of a mentoring relationship may be a valuable tool in psychological support.

Research also suggests that there are several dimensions of the mentoring relationship that can lead to employee success (Kanter 1977; Schmidt & Wolfe, 1980). Ramaswami and Dreher (2007) suggested that success comes in the form of human capital (knowledge and skill development), movement capital (exposure and visibility), and social or political capital (sponsorship and protection). While these dimensions help facilitate career advancement and success in the workplace, Phillips (1979) suggested that

mentoring is often more essential than helpful in an academic setting. Mentors shoulder the burden for "making our future" (p. 344) and the end goal is to produce quality graduate students and researchers.

Mentoring in an Academic Setting

Mentoring relationships in education often serve a specific purpose in addition to contributing to the holistic development of an individual (Lyons, 1990). Specifically for doctoral students, mentoring relationships allow individuals to feel as though the graduate experience was fulfilling and meaningful (Sedlacek, Benjamin, Schlosser, & Sheu, 2007). Most commonly, the relationship mirrors that of an apprentice model, where faculty members serve as mentors for graduate students (Campbell & Campbell, 1997). It is up to the faculty members (or other mentors) to oversee the transformation graduate students undergo (Egan, 1989). Often, it is these relationships that are thought of as an important, if not the most important, resource for graduate students and contribute to their overall experience (Hartnett & Katz, 1977).

One common misconception about mentoring in academia is the confusion of mentoring versus advising. All students experience some advisor-student relationship, but not all experience a mentor-student relationship. Students often confuse the two and typically hold advisor and mentor in the same category when a positive experience has been had (Schlosser & Gelso, 2001). In fact, Schlosser, Knox, Moskovitz, and Hill (2003) found that when students characterize a good advising relationship, they often describe a good mentoring relationship.

Felder (2010) found that if faculty assumed the role of mentor, they should employ key practices so not to marginalize students. This included acknowledging

students outside of the classroom, upholding a sense of respect for students, and sharing ideas about research and academia. This last practice allows students to become more aware of the research process.

Mentors often provide students with valuable information that can not be taught inside the classroom. Unspoken rules and office politics are examples of valuable insider information (Waldeck, Orrego, Plax, & Kearney, 1997). The mentoring relationship often becomes the companion to graduate education and allows students to ask questions of people that were once in their place (1997).

Time-to-degree is also a reason why mentoring is essential in academia. Graduate students often become overwhelmed with all that is required of them throughout the course of their program. Mentoring provides a foundation of support and motivation to help graduate students finish in a timely manner and feel sense of reassurance when dealing with self-doubt (Bieber & Worley, 2006).

Mentoring as an Agent of Growth

One main benefit of mentoring, student and mentor growth, is the most commonly cited theme throughout literature (Clark, Harden, & Johnson, 2000; Corbette & Paquette, 2011; Johnson, 2007; Russell & Adams, 1997). Literature suggests that growth can happen for all participants involved, and can be both positive and negative. Mentoring relationships can also help participants grow personally and/or professionally. Crisp and Cruz (2008) found that mentoring provides an opportunity for personal growth. Graduate students are working toward some accomplishment by simply progressing toward degree completion. Mentoring fosters that drive for accomplishment as a source of motivation. Miller (2002) further argues about the role of mentoring in personal growth. His research

provides support that mentoring relationships help both the student grow and the mentor grow. He describes the mentoring relationship as a reciprocal process, and because it is a personal experience, both mentor and mentee learn throughout the course of the relationship.

Mentee Growth

Johnson (2007) highlighted the many benefits of mentoring for students. He found that, overall, the students who develop healthy relationships that aid in professional development are typically academically successful, have high levels of scholarly productivity (including paper presentations, publications, and grant opportunities), gain opportunities for networking, increase professional confidence and identity, are satisfied with their career goals, and likely have a healthy psychological outlook.

Luna and Cullen (1998) found that graduate students consider mentoring as an important part of their educational experience. An overwhelming 90% of the participants in their study echoed these sentiments, citing various reasons for the importance. These reasons include "role modeling, guidance and support, listening, enhanced self-confidence, and career advice" (Paglis, Green, & Bauert, 2006). Luna and Cullen's research focuses on mentoring as an agent to foster relationships, and as is common with many other authors, foster the opportunity for growth and development.

In graduate school, students are often integrated into an environment that incorporates a research component. Mentoring relationships are essential to the professional development of students by engaging them through and guiding them in the research component of their education (Bowman & Bowman, 1990; Green & Bauer, 1995). Such a relationship can also foster the ability to develop into a confident

researcher (Hollingworth & Fassinger, 2002). This research development is vital to many students for their future careers and professions and therefore reinforces the role mentoring plays in professional growth.

Student mentoring relationships also provide opportunity for mentee growth because of the close relationship among peers (Bowman & Bowman, 1990; Howard, 2010; Jaugietis & Hall, 2011). Student to student contact often allows for less experienced students to feel supported as they transition from one level to another, as well as the opportunity to develop a sense of community with other graduate students (Bowman & Bowman, 1990).

Mentor Growth

Most studies that focus on mentoring efforts in education are in agreement that mentoring provides an opportunity for some type of growth. Because mentoring is often a reciprocal relationship, both mentors and mentees experience this growth. Institutions may also grow from mentoring efforts as better relationships are formed between faculty/staff and students. Positive mentoring experiences provide better educational experiences for all involved. Mentors that are often provided with opportunities for research collaboration have opportunities to advance their own publication efforts (Green & Bauer, 1995).

Campbell and Campbell (2000) explored the perceptions of benefits for mentors and found that mentors identified the ability to stay connected to students as a benefit. Mentors also gained satisfaction from helping students and developing meaningful relationships. Busch (1985) found that faculty and staff, who took on the role of a

mentor, were often excited about their role and gained a sense of fulfillment. It drove faculty members to remain relevant in their field and reignited a competitive fire in them. Further, research consistently provided evidence that the most common benefits to mentors included personal fulfillment, satisfaction with development of the mentee, professional rejuvenation, opportunity for networking, motivation to remain in their chosen field, collegial support and friendship, and opportunity to build up a positive reputation (Johnson, 2007; Kram, 1985; Russel & Adams, 1997).

Mentor Preference and Selection

There is often a calculated selection process involved in the formation of mentoring relationships. This may involve a well-thought out process for the mentor or the mentee but also reveals that mentoring preferences are important to all involved in a mentoring relationship. Research conducted by Green and Bauer (1995) focused on adviser-graduate student relationships and found that the role of the adviser, a person already invested in a student's professional development, may inherently translate into a mentor role. However, Green and Bauer raise important questions in regard to selecting advisees. Their research analyzed mentee talent and aptitude as possible indicators of mentee selection, and they therefore suggest mentee potential is a driving force among mentoring relationships. Mullen, Fish, and Hutinger (2010) found, in the course of their research, that graduate students seek authoritative figures who can help them develop their writing, communication, and presentation skills. Their findings are similar to those of Green and Bauer in that aptitude is an important component of selection.

Rose (2003, 2005) wanted to focus on mentoring preferences among graduate students. She developed a scale called the *Ideal Mentor Scale* (*IMS*) in order to

understand students' concepts of their "ideal mentor." Rose's research was grounded in theory based on a combination of Levison's (1978) work and Anderson and Shannon's (1988) mentoring model. In her initial development of the scale, Rose found that mentoring preferences could be categorized into three sub-scales: Integrity, Guidance, and Relationship (Rose, 2005, p. 57). She further wanted to identify if any group differences existed in mentoring preferences. She found that there are group differences in mentor preference, but the differences exist in groups based on demographic attributes rather than academic discipline. Rose's research provides further support for the implementation of strategic mentoring programming and can contribute to overall mentoring efforts in higher education.

Bell-Ellison and Dedrick (2008) further analyzed the ability of the *IMS* to successfully evaluate graduate students' mentoring preferences. They found that, overall, the measurement model was not necessarily appropriate for their sample, but several of the individual items were appropriate measures of ideal mentoring for graduate students. Their research did confirm that an important function of the *IMS* is the "potential to stimulate conversations about mentoring and clarify where expectations of students and faculty match and where there are mismatches" (p. 566). These conversations are the core of improving mentoring efforts in higher education.

While there is much more literature that provides further understanding of mentoring functions, the studies mentioned here are pertinent to the function of mentoring in educational settings, specifically graduate school. The literature provides a basic understanding of mentoring, its incorporation into an educational environment, and the importance of such relationships to student development. The theme of mentoring

preference and selection is the foundation for the purpose of this research, and as suggested by Green and Bauer (1995), Mullen, Fish, and Hutinger (2010), Rose (2003), and Bell-Ellison and Dedrick (2008), mentoring preferences should be further investigated as they are a driving force for the establishment of mentoring relationships.

Becoming a Researcher

Graduate students should expect to partake in some level of research as a part of their graduate school experience. "Acquiring the skills and knowledge required to be education scholars should be the focal, integrative activity of predissertation doctoral education" (p. 3), according to Boote and Beile (2005). O'Brien, Malone, Schmidt, and Lucas (1998) further emphasized the importance of doctoral research by arguing, "Advancing the knowledge through the production of meaningful research is critical for the continuation of any discipline" (p. 3).

Golde and Dore (2001) argued that while a doctorate is essentially a degree grounded in research, students are sometimes not adequately prepared to become a researcher. They recommend that institutions provide annual reviews for their doctoral students. Engaging in a conversation annually provides the ability for students to "receive candid feedback on progress to the degree, discuss areas of strength and weakness, and set goals for the following year" (p. 39). They also recommend that departments provide ample enough research opportunities so students can truly get a feel for the research environment. This is evident in research conducted by Girves and Wemmerus (1988). They surveyed 948 graduate students and found that in order for doctoral students to succeed, the ability to do independent research is critical.

A common issue in identifying oneself as a researcher is the transition to independence (Gardner, 2008; Nyquist et al., 1999). Some students felt that the structure of the academic environment in their lower educational experiences did not necessarily prepare them for a smooth transition to the independence required in conducting research (i.e., dissertation writing). A common strategy for transition is socialization. Golde (1998) defined the socialization process as "one in which a newcomer is made a member of a community – in the case of graduate students, the community of an academic department in a particular discipline" (p. 56). He further explained that the socialization process consists of four tasks, including obtaining intellectual mastery, learning about what life is typically like in graduate school, gaining insight into the future profession, and incorporating oneself into that department of choice. Weidman and Stein (2003) found that, often, the general climate of the department affects socialization.

There are mixed opinions on the socialization process. Gardner (2008) suggested that aspects of professional socialization are not beneficial to students, and there is a need to adequately balance the expectations of independent thinking and responsibilities. Jazvac-Martek (2009) further commented that the socialization process often does not take into consideration "student intentions, motivations, or the variability of experiences or interactions" (p. 254) and calls into question the timing of socialization.

Socialization can often appear to take place among graduate students, but in the end, students are still left with misconceptions about the academy (Bieber & Worley, 2006). Because graduate students often seek out specific educational experiences to achieve personal and/or professional goals, a specific type of integration should be utilized in order to support this population. Suggested strategies are as follows:

- Focusing attention on students' academic experiences
- Encouraging development of skills and knowledge (critical thinking, problem-solving, etc.)
- Creating opportunities for students to have contact with faculty
- Providing avenues for personal and social growth
- Building community within student cohorts and across disciplines
- Helping students assimilate into the institution's culture and increase their sense of belonging to overcome the hurdles associated with the path to becoming a researcher (Billups, 2010).

Austin (2002) found that another common hurdle was that graduate students were taught that academic life revolved around research, teaching, advising, and service, but at the end of the experience, graduate students still did not comprehend what those components entailed. A call for a systematic and developmentally organized educational experience could alleviate the vagueness of students' impressions of the academy.

Research Self-Efficacy

Becoming a researcher entails an internal process that includes beliefs of self-efficacy (Bieschke, 2006; Bieschke, Bishop, & Garcis, 1996; Holden, Barker, Meenaghan, & Rosenberg, 1999; Kahn & Scott, 1997). The development of these beliefs is facilitated within the graduate school experience through various entities, such as mentoring relationships and specific curriculum. Many studies on research self-efficacy are grounded in theoretical work conducted by Bandura (1977). Self-efficacy is often found to have vital importance to career development as well (Forester, Kahn, & Hesson-McInnis, 2004).

In a study conducted by Kahn and Scott (1997), research self-efficacy was related to gender. Men reported having a better understanding of self-efficacy than women. They surveyed 287 doctoral students and found that possible differences of research self-efficacy may be attributed to professional training or overall career goals. Furthermore, it was found that research self-efficacy may be related to specific training environments. They suggested that interpersonal differences in the training environment may be related to levels of research self-efficacy as well.

Lambie, Hayes, Griffith, Limberg, and Mullen (2014) found that the more confident one was in research-oriented tasks (research self-efficacy), the more interested one was in research and research knowledge, indicating a positive correlation in relationship. This implies that students with lower levels of research self-efficacy and interest in research should be counseled on program fit and career goals. Mentoring relationships can aid in this counseling. Love, Bahner, Jones, and Nilsson (2007) found that "faculty support and mentoring were the most important contributors to satisfactory individual research experiences" (p. 319).

Essentially, a common goal for all doctoral students is degree completion. Faghihi, Rakow, and Ethington (1999) found that research self-efficacy, in collaboration with faculty/advisor relationships, contributes to progress on the dissertation. Their study concludes that research-self efficacy was one of the most important factors for degree progress, and supported research claims that self-efficacy is a valuable tool for program directors and administrators. While this particular study alludes to the fact that a positive environment can influence research self-efficacy, it is unknown whether or not factors such as mentoring preferences are related to research self-efficacy.

Measures of Research Self-Efficacy

Many researchers have created scales of measurement to enhance literature on research self-efficacy and provide opportunities to assess students' confidence in the area. Most research, however, provides information on the relationship of research self-efficacy to research productivity or the research training environment (Bieschke, 2006; Bieschke, Bishop, & Garcia, 1996; Faghihi, Rakow, & Ethington, 1999; Forester, Kahn, & Hesson-McInnis, 2004; Kahn & Scott, 1997).

Phillips and Russell (1994) developed the Self-Efficacy in Research Measure (SERM), one of the most commonly used measures to test self-efficacy. The instrument was one of three used to assess students' attitudes toward various research-oriented aspects – self-efficacy, training environments, and productivity. The study assessed 219 doctoral students enrolled in counseling psychology programs nationwide, and confidence of research self-efficacy was measured on a 10-point Likert Scale (ranging from 0-9). The SERM consists of 33 items that provide four factors: Practical Research Skills, Quantitative and Computer Skills, Research Design Skills, and Writing Skills. Phillips and Russell reported a coefficient alpha of .96 for overall scores (1994). Kahn and Scott (1997) adapted the SERM and created a shorter, 12-item measure, which is also commonly used in research. Instead of the 10-point Likert scale, Kahn and Scott reduced the confidence range to a 5-point Likert scale. Further, Kahn and Scott reported an internal consistency of .90 for total scores.

The Research Self-Efficacy Scale (RSES) (Bieschke, Bishop, & Garcia, 1996; Greeley et al., 1989) has the ability to measure individual assessment of the ability to perform tasks associated with research. The researchers made inferences from a sample

of 177 graduate students enrolled in programs found in the sciences and humanities. Confidence was measured on a 100-point scale; 0 indicated no confidence, while 100 indicated total confidence. The RSES is a 51-item instrument with four factors or subscales: Research Conceptualization, Research Implementation, Early Tasks, and Presenting the Results (Forester et al., 2004). Bieschke et al. (1996) reported a coefficient alpha of .96 for overall scores.

The Research Attitudes Measure (RAM) (O'Brien, Malone, Schmidt, & Lucas, 1998) took a different approach to assessing research self-efficacy. Instead of studying how confident a person is in carrying out tasks or behavior associated with research, this measure assesses how he or she feels about research-related tasks. The sample used for the development of this instrument was 150 graduate students enrolled in counseling psychology programs. Twenty-three items were retained for the final measure with six factors: Discipline and Intrinsic Motivation, Analytical Skills, Preliminary Conceptualization Skills, Writing Skills, Application of Ethics and Procedures, and Contribution and Utilization of Resources (Schlosser & Gelso, 2001). O'Brien et al. (1998) reported a coefficient alpha of .93 for total scores.

Forrester et al. (2004) further analyzed the SERM, RSES, and RAM. Confirmatory factor analysis was completed on each instrument to assess the fit of the factor structure. The analysis failed to provide evidence of good fit for each hypothesized model, and the researchers concluded that the results should be interpreted with methodological considerations. Their sample consisted of 1,004 students enrolled in graduate psychology programs. Further, they recommend that if instruments are to be

used in the future, subscales should not necessarily be used since they do not provide evidence of good fit.

Research Identity Development

Identity development is vital to graduate students throughout their journey, especially doctoral students (Austin & McDaniels, 2006; Colbeck, 2008; Coryell et al., 2011; Hall & Burns, 2009; Sweitzer, 2009). Research suggests that the ways that doctoral students come to the conclusion of their professional identities will have a lasting effect on their future careers as researchers (Colbeck, 2008). Therefore, the process of a doctoral student's journey is just as important as the desired outcome. Gee (2000) found that "the notion of identity . . . can be used as an analytic tool for studying important issues of theory and practice in education" (p. 100), and that the perspective of identity can be shaped by a state of being, a position, an individual trait, or an experience. Furthermore, Green (2005) explains that "doctoral pedagogy is as much about the production of identity, then, as it is about the production of knowledge" (p. 162). While professional identity is important, it is also vital for graduate students to engage in research identity development.

Students pursuing a doctorate are making a conscious decision to become an expert in their chosen field, and with that decision comes a crisis of sorts to establish oneself (Colbeck, 2008). Furthermore, students must begin to merge their personal values with their professional ones as they weave the path to the professoriate (Nyquist et al., 1999; Sweitzer, 2009). Hall and Burns (2009) argued that mentoring can aid identity development, not only as doctoral students, but also as researchers. Students learn to

adopt or avoid present identities, and they are shaped through various social and cultural factors (Alsup, 2006; Gee, 2006; Hall & Burns, 2009).

Similar to mentoring being a reciprocal relationship, mentoring relationships "are reciprocal negotiations that capitalize on both existing identities" (Hall & Burns, 2009, p. 55). Taking the time to have a conversation about what it means to be a researcher allows for improvement in such a relationship. This type of discussion actively aids students in their own development without catching them off guard. Graduate students rely on relationships for the support and guidance they need to cope with the demands of the educational experience (Sweitzer, 2009). Walker, Golde, Jones, Bueschel, and Hutchings (2009) argued that the apprenticeship model is not an ideal structure for graduate education and training because it does not support the reciprocity of the relationship. Instead, it should be a shared model so that both students and faculty can partake in the experience together.

Coryell et al. (2011) found that when students are asked about identifying themselves as researchers, they experience state anxiety. They define state anxiety as "apprehension that occurs only in certain situations" (p.6). More specifically, students questioned the legitimacy of the research and were anxious about how to conduct research, their ability to do research, their confidence in learning about research, and the quality of their research. This study showed evidence of difficulty in resolving a research identity, which can be helped through the formation of mentoring relationships. Coryell et al. (2011) discerned that the more confident a doctoral student is, the better the likelihood of success. Mentoring is a recommendation to aid in the development of self-confidence and skill development. Taking into consideration a student's attitudes and

views of research, the type of research they may want to conduct, and their general characteristics should be a priority for educators and can help foster a positive environment for research productivity (Benishek & Chessler, 2005).

Summary

Mentoring relationships are often one resource students can access in order to aid professional and personal development. Graduate school can be overwhelming, but with the support and guidance of a more experienced member of the academic community, it is manageable. Because these relationships are personal experiences, they may often differ in structure based on environmental context. Mentoring preferences are an essential component to forming mentoring relationships. Taking into consideration one's preference of characteristics can strengthen the relationship, as well as help meet the needs of both parties involved.

Mentoring relationships can aid in growth for both the mentor and mentee, and they can support identity development. It is apparent from the research that identity development and the journey to becoming a researcher are critical to the graduate school experience. What research fails to acknowledge is the relationship between preferred mentoring characteristics and students' confidence in being able to carry out research-oriented tasks. More research is needed on understanding how preferred mentoring characteristics can aid in this specific aspect of research training so that administrators can more adequately prepare students in the course of their academic experience.

CHAPTER III

METHODOLOGY

Overview

The goal of this study was to examine the relationship between mentoring characteristics and research self-efficacy. Understanding this relationship can help administrators more thoroughly prepare graduate students in their journey toward obtaining a degree. The researcher sought to understand several relationships involving mentoring characteristics. Variables such as prior mentoring experiences, preferred mentoring style, and enrollment status (full-time/part-time) were examined to determine if they made a difference in research self-efficacy, preferred mentoring characteristics and satisfaction with current mentoring relationship.

This study utilized a quantitative approach with survey methodology. The purpose of this research design was to provide "a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell, 2003, p. 153). The researcher chose this research design because the primary goal was to make inferences about the relationships of preferred mentoring characteristics and research self-efficacy based on a sampling of doctoral students. The nature of the survey was cross-sectional, and data were collected using the *Ideal Mentor Scale* (Rose, 2003) and the *Self-Efficacy in Research Measure* (Phillips & Russell, 1994).

The following research questions formed the basis for this study:

1. Is there a difference in students' preferred mentoring characteristics for those who have reported having prior mentoring experiences and those who had not reported having prior mentoring experiences?

2. Is there a difference in students' level of research self-efficacy for those who have had prior mentoring experiences and those who had not reported having prior mentoring experiences?
3. Is there a difference in students' satisfaction with current mentoring relationship for those who have reported having prior mentoring experiences and those who had not reported having prior mentoring experiences?
4. Is there a difference in students' satisfaction with current mentoring relationship for those who are enrolled in graduate school full-time and those who are enrolled part-time?
5. Is there a difference in students' level of research self-efficacy based on preferred mentoring style?
6. Is there a difference in students' satisfaction with current mentoring relationship based on preferred mentoring style?

Participants

Graduate students enrolled in accredited doctoral programs across the United States served as the target population for this study. In order to obtain a national sample, regional accreditation and Carnegie classifications were used to identify schools of interest. According to the Council for Higher Education Accreditation (CHEA) (2014), there are six regional accrediting agencies that govern institutions of higher learning (colleges and universities) located in the United States:

- Middle States Association of Colleges and Schools (MSA) includes Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania, Puerto Rico, and Virgin Islands

- New England Association of Schools and Colleges (NEASC) includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont
- North Central Association of Colleges and Schools (NCA) includes Arizona, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, New Mexico, North Dakota, Ohio, Oklahoma, South Dakota, West Virginia, Wisconsin, and Wyoming
- Northwest Commission on Colleges and Universities (NWCCU) includes Alaska, Idaho, Montana, Nevada, Oregon, Utah, and Washington
- Southern Association of Colleges and Schools (SACS) includes Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia
- Western Association of Schools and Colleges (WASC) includes California, Hawaii, Guam, American Samoa, Micronesia, Palau, and Northern Marianas Islands

Carnegie classifications are used to describe institutional diversity, and the taxonomy was last updated in 2010. For the purpose of this research, the basic classification was used to identify institutions as either non-research intensive or research intensive. Non-research intensive institutions are classified as Master's Colleges and Universities. These institutions award fewer than 20 doctoral degrees annually and can further be described as small, medium, or large. Research intensive institutions are classified as Doctorate-granting Universities. These institutions award at least 20 doctoral degrees annually. Doctorate-granting Universities can further be broken down into three categories: doctoral/research university, a research university (high research

activity), or a research university (very high research activity) (Carnegie Classification for the Advancement of Teaching, 2010). Participating institutions were selected from each region as well as each Carnegie classification to ensure an opportunity for a national sample.

Procedure

Data collection occurred after obtaining permission from the Institutional Review Board (IRB) (Appendix A). Initially, institutions were chosen based on their regional accrediting agency and Carnegie classification. The researcher identified all available institutions and separated them into six groups based on regional accrediting agency. Each group was then further broken down into two categories: non-research intensive and research intensive based on Carnegie classification. This strategy provided the researcher with the opportunity to then randomly identify three to five schools within each group, for a total of 36 institutions. Doctoral faculty and advisors at each of the chosen 36 institutions were then sent an email, inviting them to share the invitation for participation with their doctoral students. Students choosing to participate completed the questionnaire through the web-based program Qualtrics. An informed consent form (Appendix B) served as the beginning of the questionnaire, along with information regarding the study's purpose and benefits for participants. Researcher information was provided in addition to the assurance of anonymity and voluntary participation. Once students agreed to participate, they were provided with a short demographic questionnaire (Appendix C) consisting of the following items: sex, age, ethnicity, institution, doctoral program, enrollment status, number of years completed in doctoral program, number of research

courses completed at doctoral level, and mentor status. For mentor status, participants chose the statement that best represented their mentoring situation:

a. I have not had a mentor in the past, nor do I currently have a mentor
b. I have had a mentor in the past, but I do not currently have a mentor
c. I have had a mentor in the past, and I currently have a mentor
d. I have not had a mentor in the past, but I currently have a mentor

If the participant chose item c or d, they were provided a further item asking them to indicate the type of mentor (academic, personal, professional, other, etc.). Once demographic data were collected, participants received response items for the *IMS* and *SERM* regarding mentoring characteristics and research self-efficacy. If participants indicated they had an academic mentor, they were also asked to rate their level of satisfaction the qualities of that mentor based on the items on the *IMS* scale.

Instrumentation

Two pre-existing instruments were used in this study and administered electronically, along with a researcher-created component assessing the participants' demographic data. Furthermore, if a participant indicated they currently had an academic mentor from the demographic questionnaire, participants were provided with items that corresponded to the *Ideal Mentor Scale* (Rose, 2003), but items were modified to assess the level of satisfaction with the current qualities of their academic mentor. The instruments were administered through Qualtrics.com, an online survey software to which the University maintained a subscription.

Ideal Mentor Scale

The Ideal Mentor Scale (IMS) (Rose, 2003) is a 34-item instrument designed to measure attributes of the "ideal" mentor (Appendix D). In order to obtain the final 34-item instrument, Rose (2003) approached "volunteers with specific knowledge of graduate education and/or mentoring" (p. 477) to evaluate content validity on 50 items using Anderson and Shannon's (1988) theoretical framework on mentoring. Next, two focus groups consisting of graduate students added 85 items, for a total of 135 items, to include their personal descriptions of mentoring as well as those found in literature. Of the 135 items, 24 were eliminated due to redundancy; therefore the first pilot study (sample 1, $N = 82$) was conducted with 111 items. The IMS was administered two more times thereafter as adjustments were made along the way (sample 2, $N = 250$, was assessed using 103 items and sample 3, $N = 380$, was assessed using 76 items). Factor analysis was used to further construct the instrument, which incorporated a comparison of samples 2 and 3 and Exploratory Factor Analysis (EFA) resulted in the final 34-item product. Through this analysis, Rose identified three factors: Integrity, Guidance, and Relationship.

- Integrity (14 items): "Embodies respectfulness for self and others, and empowers protégés to make deliberate, conscious choices about their lives" (p. 487).
- Guidance (10 items): "Perhaps the most straight-forward interpretation of the word 'mentor' in an academic setting since it represents aspects of day-to-day work of a graduate student, such as solving research problems and planning presentation of one's work" (p. 487).

- Relationship (10 items): "Connotes a sharing of the aspects of oneself that are traditionally viewed as private or somewhat more intimate than is typically the case in student-faculty relationships: personal problems, social activities, and life vision or worldview" (p. 487).

Rose reported an overall Cronbach Alpha reliability coefficient as .77 to .87 for Sample 1 and .77 to .84 for Sample 2.

Self-Efficacy in Research Measure

The Self-Efficacy in Research Measure (SERM) (Phillips & Russell, 1994) is a 33-item instrument, used to assess graduate students' level of confidence in being able to carry out tasks related to research or research processes (Appendix E). The instrument was constructed based on the 23-item Survey of Research Training (SORT) developed by Royalty and Reising (1986). According to Forester et al. (2004), "the validity of the total scores was supported by (a) significantly higher SERM scores for advanced graduate students than beginning graduate students and (b) a .45 correlation between SERM total scores and a measure of research productivity" (p. 7). The instrument measures confidence, ranging from no confidence (score of 0) to total confidence (score of 9). Phillips and Russell identified four factors or subscales: Research Design Skills, Practical Research Skills, Quantitative and Computer Skills, and Writing Skills. The Cronbach Alpha reliability coefficient reported for their sample is .96.

Data Analysis

Data were analyzed using version 23.0 of SPSS and the selected critical value (p) criteria was less than .05. Data were initially screened for missing values, and necessary descriptive statistics were identified including characteristics of the sample and mean

scores of the dependent variables. A confirmatory factor analysis was conducted on the IMS to add to the construct validity of this scale. Specific statistical analysis was chosen for each research question.

Research Question 1

A multivariate analysis of variance (MANOVA) was used to determine statistical differences for the first research question: Is there a difference in students' preferred mentoring characteristics for those who have reported having prior mentoring experiences and those who had not reported having prior mentoring experiences? The dependent variables in this case were the IMS subscale scores for three factors: integrity, guidance and relationship. The independent variable was the student reporting whether or not they had prior mentoring experiences.

Research Question 2

An independent t-test was used to determine statistical differences for the second research question: Is there a difference in students' level of research self-efficacy for those who have had prior mentoring experiences and those who had not reported having prior mentoring experiences? The dependent variable in this case was the research self-efficacy score as assessed by the SERM. The independent variable in this case was the student reporting whether or not they had prior mentoring experiences.

Research Question 3

A MANOVA was used to determine statistical differences for the third research question: Is there a difference in students' satisfaction with current mentoring relationship for those who have reported having prior mentoring experiences and those who had not reported having prior mentoring experiences? The dependent variables in

this case were the satisfaction scores based on the IMS subscales (integrity, guidance, and relationship). The independent variable in this case was the student reporting whether or not they had prior mentoring experiences.

Research Question 4

A MANOVA was used to determine statistical differences for the fourth research question: Is there a difference in students' satisfaction with current mentoring relationship for those who are enrolled in graduate school full-time and those who are enrolled part-time? The dependent variables in this case were the satisfaction scores based on the IMS subscale (integrity, guidance, and relationship). The independent variable in this case was enrollment status for the participant.

Research Question 5

An independent t-test was used to determine statistical differences for the fifth research question: Is there a difference in students' level of research self-efficacy based on preferred mentoring style? The dependent variable in this case was the research self-efficacy score as assessed by the SERM. The independent variable was preferred mentoring style (as assessed by the IMS).

Research Question 6

A MANOVA was used to determine statistical differences for the sixth research question: Is there a difference in students' satisfaction with current mentoring relationship based on preferred mentoring style? The dependent variables in this case were the satisfaction scores based on the IMS subscale (integrity, guidance, and relationship). The independent variable was preferred mentoring style (as assessed by the IMS).

CHAPTER IV

ANALYSIS OF DATA

Overview

The purpose of this study was to examine the relationships of mentoring characteristics and research self-efficacy. This chapter reviews the data analysis conducted using survey methodology. Data were collected from January 2015 – April 2015. All data collected were considered quantitative in nature.

The researcher sent electronic invitations to faculty and staff at thirty-six institutions across the country encouraging them to share the opportunity to participate with graduate students enrolled in doctoral programs (Appendix F). A web-based survey was embedded in the email and was accessible for twelve weeks. The research instrument was comprised of 10 demographic items, 34 items adapted from the IMS (Rose, 2003), and 33 items adapted from the SERM (Phillips & Russel, 1994). The 34 items from the IMS were on a 5-point scale of importance, and the 33 items from the SERM were on a 10-point scale of confidence. Once the twelve-week collection period came to an end, data were downloaded from Qualtrics and imported into SPSS (version 23). Responses were obtained from 183 participants. The researcher could not calculate a response rate due to the fact that invitations were distributed to faculty and staff electronically. After screening data for missing values and incomplete questionnaires, 125 total responses were subjected to further analysis. For questionnaires that were at least 90% complete, missing values were imputed using SPSS.

Sample Demographics

The sample for this study consisted of 125 students enrolled in Ph.D programs across the country. Of the 125 participants, 49 were male and 76 were female. The majority of the participants were White/Caucasian (78.4%), followed by African American (8%), Asian (5.6%), Other (5.6%), Hispanic (1.6%), and Pacific Islander (.8%). The mean age of the sample was 35.26 and the majority of participants were enrolled in a doctoral program full-time (67.2%) at a research-intensive institution as determined by a Carnegie classification (68.8%). The average participant completed 7.94 research courses at the time of the study. While all accrediting agencies were represented in the sample, the majority of participants were enrolled in institutions accredited by SACS (see Figure 1).

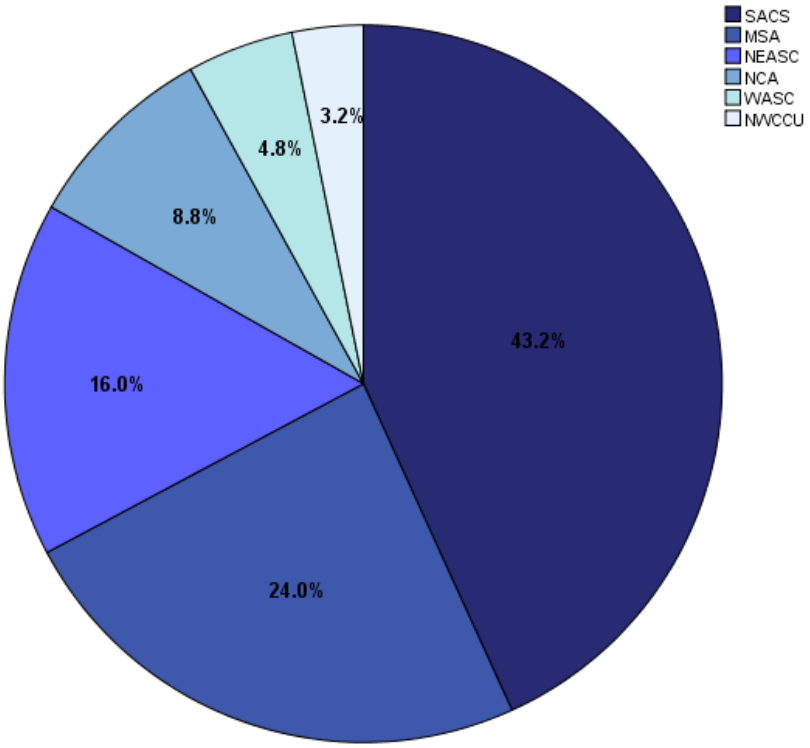


Figure 1. Participant location based on accreditation agency.

Participants were asked to report their mentoring experiences, both past and present, by selecting one of four statements (shown in Table 1).

Table 1

Mentoring Experiences

Experience Statement	*f*	%
1. I have not had a mentor in the past, nor do I currently have a mentor.	31	24.8
2. I have had a mentor in the past, but I do not currently have a mentor.	11	8.8
3. I have had a mentor in the past, and I currently have a mentor.	71	56.8
4. I have not had a mentor in the past, but I currently have a mentor.	12	9.6

Statements 1 and 4 reflect that the participant did not have any past mentoring experiences, while statements 2 and 3 reflect that the participant did have past mentoring experiences. Of the sample, 34.4 % reported as having no past mentoring experience, while 65.6% reported as having past experience. Statements 1 and 2 reflect that the participant has a current mentor, while statements 3 and 4 reflect that the participant does not have a current mentor. Of the sample, 33.6 % reported as not having a current mentor, while 66.4% (n = 83) reported as having a current mentor. Of those that reported having a current mentor, 93% reported that the current mentor was an academic mentor.

Instrument Reliability

Ideal Mentor Scale

The IMS measures doctoral students' mentoring preferences based on their ideal mentor and consists of 34 items. For this particular study, the IMS had high reliability with the overall Cronbach's α = .872, which is consistent with Rose's (2005) findings and Bell-Ellison and Dedrick's (2008) findings. The Integrity subscale consists of 14 items (3, 5, 7, 8, 10, 12, 14, 17, 19, 21, 23, 26, 29, and 32) and reported high reliability with the Cronbach's α = .819. The Guidance subscale consists of 10 items (1, 2, 6, 9, 13, 16, 27, 31, 33, and 34) and reported high reliability with the Cronbach's α = .834. The Relationship subscale consists of 10 items (4, 11, 15, 18, 20, 22, 24, 25, 28, and 30) and reported high reliability with the Cronbach's α = .732. Despite being slightly lower than the other studies (e.g. Rose, 2005 and Bell-Ellison & Dedrick, 2008), all reliability coefficients for the subscales are above the acceptable standard of .70. Table 2 shows a comparison of individual subscale reliability coefficients with the findings of Rose (2005) and Bell-Ellison and Dedrick (2008).

Table 2

Reliability Coefficient Comparisons

Study	Rose (2005)	Bell-Ellison and Dedrick (2008	Johnston (2015)
Integrity Subscale	α = .90	α = .87	α = .819
Guidance Subscale	α = .88	α = .79	α = .834
Relationship Subscale	α = .81	α = .79	α = .732

Self-Efficacy in Research Measure

The SERM measures students' research self-efficacy level and consists of 33 items. This instrument had high reliability with the overall Cronbach's Alpha at .966. This is consistent with Phillips and Russell's (1994) findings of a .96 reliability coefficient.

Confirmatory Factor Analysis

The IMS was subjected to Confirmatory Factor Analysis (CFA). Even though the results did not return the best model fit, the researcher continued with this particular model in collaboration with the finding recommendations in Bell-Ellison and Dedrick's (2008) study. This was done primarily to mirror the instrument used in Rose's studies (2003, 2005). Using SPSS Amos (version 23), the researcher found that there was not a good model fit (CFI = .624, RMSEA = .089), which as demonstrated in Bell-Ellison and Dedrick's study, could be attributed to the small sample size.

Dependent Variable Data

Preferred Mentoring Characteristics

The IMS assessed participants' preferred mentoring characteristics by having them rate items on a scale from 1 to 5, with 5 being the most important, related to characteristics they find most important in their ideal mentor. Mean scores were calculated for each of the three subscales on the IMS: integrity, guidance and relationship. The integrity subscale (Appendix G) consisted of 14 items with a mean score of 4.39. Item 12, "treat me as an adult who has a right to be involved in decisions that affect me," had the highest mean (M = 4.76, SD = .477), while item 14, "inspire me by his or her example and words," had the lowest mean (M = 4.11, SD = .909) for this

subscale. The guidance subscale (Appendix H) consisted of 10 items with a mean score of 4.26. Item 6, "help me maintain a clear focus on my research objectives," had the highest mean (M = 4.69, SD = .614), while item 2, "give me specific assignments related to my research problem," had the lowest mean (M = 3.65, SD = 1.205) for this subscale. The relationship subscale (Appendix I) consisted of 10 items with a mean score of 2.70. Item 30, "help me realize my life vision," had the highest mean (M = 3.62, SD = 1.133), while item 4, "take me out for dinner and/or drink after work" had the lowest mean (M = 1.77, SD = 1.076). The lower overall mean for the relationship subscale suggests that doctoral students do not value social interactions with their mentors as much as they value being respected by their mentor (integrity) or being guided by their mentor in aspects of graduate school, such as research and academics (guidance).

Satisfaction with Current Mentor

In order to better understand students' satisfaction with their current academic mentor, the researcher used the same items from the IMS and grouped items based on the three factor solution. Participants were to rate items regarding aspects of mentoring on a scale of 1 to 5, with 5 being most satisfied. Only 77 students reported having an academic mentor; therefore, the sample for this analysis was smaller than that for the overall study. The integrity subscale (Appendix J) mean score was 4.32. Item 7, "respect the intellectual property rights of others," had the highest mean (M = 4.65, SD = .774), while item 14, "inspire me by his or her example and words" had the lowest mean (M = 4.14, SD = 1.097) for this subscale. The guidance subscale (Appendix K) mean score was 4.01. Item 6, "help me maintain a clear focus on my research objectives," had the highest mean (M = 4.17, SD = 1.163), while item 2, "give me specific assignments

related to my research problem," had the lowest mean (*M* = 3.81, SD = 1.121) for this subscale. The relationship subscale (Appendix L) mean score was 4.02. Item 25, "keep his or her work space neat and clean," had the highest mean (*M* = 4.19, SD = 1.048), while item 4, "take me out for dinner and/or drink after work" had the lowest mean (*M* = 3.57, SD = 1.370). The highest overall mean for the integrity subscale suggests that doctoral students are most satisfied with the level of respect they receive from their mentors; however, all subscales had above a 4.0 mean score which suggests that this sample is satisfied with their mentoring relationships as a whole.

Research Self-Efficacy

A mean score was calculated for the self-efficacy in research measure (Appendix M). This instrument consisted of 33 item relating to aspects of research. Participants indicated their level of confidence for each item on a scale of 1 to 10, with 10 being the most confident. The mean score for this measure was 7.24. The item with the highest mean score was item 14, "reviewing the literature in an area of research interest" (*M* = 8.51, SD = 1.601). The item with the lowest mean score was item 31, "writing statistical computer programs" (*M* = 4.22, SD = 2.945).

Research Hypotheses

Six hypotheses were formed based on the research questions that informed this particular study.

1. Prior mentoring experience makes a difference in preferred mentoring characteristics.
2. Prior mentoring experience makes a difference in level of research self-efficacy.

3. Prior mentoring experience makes a difference in satisfaction with current mentoring relationship based on the IMS subscales.
4. Enrollment status makes a difference in satisfaction with current mentoring relationship based on the IMS subscales.
5. Preferred mentoring style (integrity, guidance, or relationship) makes a difference in research self-efficacy.
6. Preferred mentoring style (integrity, guidance, or relationship) makes a difference in students' satisfaction with their current mentoring relationship.

Hypothesis 1

For the first research hypothesis, prior mentoring experience makes a difference in preferred mentoring characteristics, a MANOVA was conducted to determine statistical differences due to the presence of three dependent variables: Integrity subscale score, Guidance subscale score, and Relationship subscale score. Because Box's test was not significant, Wilk's statistic was used and resulted in a significant difference of whether or not a student had prior mentoring experiences on preferred mentoring characteristics, $\Lambda = .909$, $F(3, 121) = 4.04$, $p = .009$. After further univariate analysis, it was found that there was a significant difference for the Guidance subscale, $F(1, 123) = 5.814$, $p = .017$, but no significant differences were found for the Integrity subscale, $F(1, 123) = .071$, $p = .791$, or the Relationship subscale, $F(1, 123) = 2.122$, $p = .148$. This suggests that whether or not a student had prior mentoring makes a difference in how much they value the guidance aspect of a mentoring relationship. Table 3 shows the mean scores for whether or not students have had prior mentoring experiences by each subscale score.

Table 3

Means and Standard Deviations for prior mentoring experience status and IMS subscales

	Student reported having or not having prior mentoring experiences	*M*	SD	N
Integrity	Prior experience	4.40	.458	82
	No prior experience	4.37	.416	43
	Total	4.39	.442	125
Guidance	Prior experience	4.17	.589	82
	No prior experience	4.42	.482	43
	Total	4.26	.565	125
Relationship	Prior experience	2.76	.640	82
	No prior experience	2.59	.601	43
	Total	2.70	.630	125

Hypothesis 2

For the second research hypothesis, prior mentoring experience makes a difference in level of research self-efficacy, an independent t-test was conducted to determine statistical differences. While the results did not indicate there were statistical differences between the two groups ($t(123) = 1.931$, $p = .225$), participants are slightly more confident in their research abilities with prior mentoring experiences ($M = 7.42$, SE = .155) than without prior mentoring experiences ($M = 6.88$, SE = .251). Furthermore, the calculated effect size for this test was $r = .37$, which represented a small effect.

Hypothesis 3

For the third research hypothesis, prior mentoring makes a difference in satisfaction with the current mentoring relationship. Due to the presence of three dependent variables, a MANOVA was conducted to determine statistical differences.

The dependent variables included Integrity subscale satisfaction scores, Guidance subscale satisfaction scores, and Relationship subscale satisfaction scores. Box's test was not significant; therefore, Wilk's statistic was used to determine statistical significance. The results were not significant, $F(3, 73) = .620$, $p = .604$, which suggest that having prior mentoring experience does not make a difference in satisfaction with a current mentoring relationship based on the IMS subscales (integrity, guidance, and relationship). Table 4 represents mean scores and standard deviations for the IMS subscales for prior mentoring experience.

Table 4

Means and Standard Deviations for prior mentoring experience status and IMS subscale satisfaction scores

	Student reported having or not having prior mentoring experiences	*M*	SD	N
Integrity - satisfaction	Prior experience	4.29	.837	66
	No prior experience	4.46	.510	11
	Total	4.32	.798	77
Guidance - satisfaction	Prior experience	3.99	.935	66
	No prior experience	4.19	.721	11
	Total	4.01	.906	77
Relationship - satisfaction	Prior experience	3.98	.865	66
	No prior experience	4.31	.641	11
	Total	4.02	.841	77

Hypothesis 4

For the fourth research hypothesis, enrollment status makes a difference in satisfaction with the current mentoring relationship. Due to the presence of three dependent variables, a MANOVA was conducted to determine statistical differences.

The three dependent variables included Integrity subscale satisfaction scores, Guidance subscale satisfaction scores, and Relationship subscale satisfaction scores. Box's test was not significant; therefore, Wilk's statistic was used to determine statistical significance. The results were not significant, $F(3, 73) = .287$, $p = .835$, which suggest that enrollment status did not make a difference in satisfaction with a current mentoring relationship based on the IMS subscales (integrity, guidance, and relationship). It should be noted, though, that the mean scores show that part-time students are slightly more satisfied with their current mentoring relationship based on each of the three subscales than full-time students. Table 5 shows mean scores and standard deviations of the IMS subscales for enrollment status.

Table 5

Means and Standard Deviations for enrollment status and IMS subscale satisfaction scores

	What is your enrollment status?	*M*	SD	N
Integrity - satisfaction	Full-time	4.28	.801	59
	Part-time	4.44	.800	18
	Total	4.32	.798	77
Guidance - satisfaction	Full-time	3.96	.912	59
	Part-time	4.18	.890	18
	Total	4.01	.906	77
Relationship - satisfaction	Full-time	3.99	.813	59
	Part-time	4.14	.943	18
	Total	4.02	.841	77

Hypothesis 5

For the fifth research hypothesis, preferred mentoring style makes a difference in level of research self-efficacy, an independent t-test was used to determine statistical differences. Even though there are three preferred mentoring styles (integrity, guidance, and relationship), participants in this study reported as preferring a relationship based on integrity or guidance. Therefore, there was no need to conduct a one-way ANOVA. The results did in fact show that there are statistical differences in research self-efficacy between those that prefer integrity and those that prefer guidance ($t(118) = 2.391$, $p = .708$). Based on the group means, those that prefer a mentoring style centered on integrity ($M = 7.50$, SE = .169) are slightly more confident than those that prefer a mentoring style centered on guidance ($M = 6.84$, SE = .219). Furthermore, the calculated effect size was $r = .45$, which resulted in a medium-sized effect.

Hypothesis 6

For the sixth research hypothesis, preferred mentoring style makes a difference in satisfaction with current mentoring relationship. Due to the presence of three dependent variables, a MANOVA was conducted to determine statistical differences. The three dependent variables included Integrity subscale satisfaction scores, Guidance subscale satisfaction scores, and Relationship subscale satisfaction scores. Box's test was not significant; therefore, Wilk's statistic was used to determine statistical significance. The results were not significant, $F(3, 70) = 1.679$, $p = .179$, which suggest that preferred mentoring style does not make a difference in satisfaction with a current mentoring relationship based on the IMS subscales (integrity, guidance, and relationship). It should be noted, however, that those who value guidance in an ideal mentoring relationship are

more satisfied with the integrity aspect of their current mentoring relationships. Table 6 provides mean scores and standard deviation of the IMS subscales for preferred mentoring style.

Table 6

Means and Standard Deviations for preferred mentoring style and IMS subscale satisfaction scores

	Preferred (ideal) mentoring style	*M*	SD	N
Integrity - satisfaction	Integrity	4.39	.744	49
	Guidance	4.08	.883	25
	Total	4.29	.802	74
Guidance - satisfaction	Integrity	4.04	.856	49
	Guidance	3.84	.991	25
	Total	3.97	.902	74
Relationship - satisfaction	Integrity	4.05	.791	49
	Guidance	3.86	.921	25
	Total	3.98	.836	74

CHAPTER V

SUMMARY

Overview

The purpose of this study was to explore mentoring characteristics and the relationship to research self-efficacy of graduate students enrolled in Ph.D. programs. Participants were graduate students enrolled at regionally accredited institutions of higher education with a Carnegie classification of research-intensive or nonresearch-intensive. The *Ideal Mentor Scale* (Rose, 2003), a 34-item questionnaire assessing students' preferred mentoring characteristics, and the *Self-Efficacy in Research Measure* (Phillips & Russell, 1994), a 33-item questionnaire assessing students' confidence in research related tasks, were completed by 125 doctoral students. Furthermore, a modified version of the *IMS*, assessing students' satisfaction with aspects of mentoring was completed by 77 of the 125 doctoral students.

Discussion

Data were analyzed using quantitative analysis, and results were presented in the previous chapter. These results are further discussed in this chapter.

Sample Demographics

The typical doctoral student participating in this study was a White/Caucasian female enrolled full-time at a four-year public university accredited by the Southern Association of Colleges and Schools (SACS), which includes states such as Alabama, Louisiana, and Mississippi. It is important to note that the average age of the participants was 35. The majority of all participants (42%) completed 2-3 years in their program and had taken, on average, at least 7 research courses. As Levinson's Early Adulthood era

developmental period is the focus for the theoretical foundation of this study, this age falls in the appropriate range, 17-45 (Levison, 1978). Furthermore, Levinson expressed that a mentoring relationship was vital in this time period. The majority of all participants reported having a mentor (66.4%), as did the majority of all participants reported having had prior mentoring experience (65.6%). More specifically when asked to report the type of mentor, 93% of students who reported having had a current mentor reported they had an academic mentor. This is a very important statistic, as researchers tell us that mentoring relationships provide opportunities for mentee growth. Johnson (2007) expressed professional confidence as a benefit of these types of relationships, which further demonstrates the need for this type of research.

While the researcher intended to obtain a larger sample, 183 students started the questionnaire. Of those, 125 students completed the questionnaire, which resulted in a 68.3% completion rate. Because the researcher had to rely on faculty and staff to distribute the participation invitations, the total response rate could not be calculated. The sample size could be attributed to this distribution method. Regional representation may also be attributed to faculty and staff's willingness to encourage doctoral students to participate in the research study.

In selecting 36 regionally accredited institutions, the researcher attempted to obtain a national sample, but the geographic distribution was slightly skewed. Almost half of the participants represented the SACS accreditation region (43%). Less than ten percent of the sample represented the WASC and NWCCU regions which included northwest and western states, such as Montana, Nevada, Oregon, California, and Hawaii.

Mentoring Characteristics

The researcher sought to understand mentoring characteristics, both preferred and actual, by assessing students' ideal mentoring preferences and satisfaction with current mentoring relationship. Even though the CFA did not return a good model fit for this sample, the researcher utilized the three factor model for analysis as recommended by Bell-Ellison and Dedrick (2008), due to the small sample size. The majority of participants, 58.4% to be specific, preferred a mentoring style that was based on the factor Integrity, while 37.6% valued a mentoring style that was based on the factor Guidance. It is interesting that no participants reported as having preferred a mentoring style that was based on the factor Relationship. Participants marked items on this particular subscale below the midpoint, which provides an interesting connection to growing a research identity. Researchers, such as Golde and Dore (2001) and Girves and Wemmerus (1988), suggest that providing an annual review or opportunities for independent research provide the best road map for building a strong research identity. This would align with the results of this study where students reported preferences for relationships based on Integrity and Guidance. The Relationship subscale focuses on social aspects of the mentoring relationship which are not necessarily beneficial to building confidence as a researcher. However, it is important to note that, as Golde (1998) suggests, socialization is important aspect to transitioning to a researcher identity. Future research should explore the idea of socialization further to identify how it fits in with research identity development. Gardner (2008) suggests that socialization is not beneficial, which would also align with the results of this study where items of the Relationship subscale are not a strong preferences for doctoral students.

The majority of participants were most satisfied with items relating to the Integrity subscale in their current mentoring relationship, which suggests that mentors are doing a good job in making sure mentees know they are respected and supported. While still rated highly, the least amount of participants were most satisfied with items relating to the Guidance subscale in their current mentoring relationship. This subscale specifically relates to aspects of graduate school that one would consider most relevant to research self-efficacy, such as solving research problems, participating in presentations, establishing a research design, etc.

Research Self-Efficacy

The researcher sought to understand students' level of confidence on tasks that were research-oriented. The *SERM* provided an opportunity for students to rate their confidence on a scale from 0 to 9. The average research self-efficacy score was a 7 out of 10; therefore, the majority of participants felt pretty confident in their ability to carry out the items presented to them. These results are not surprising considering the average number of research courses taken at the time of the study was 7. It would be interesting to determine the level of anxiety experienced associated with the types of tasks on the *SERM* to determine if the strong confidence is related to how this group feels about themselves as researchers. Coryell et al. (2011) suggests that anxiety experienced resulted in difficulty in being able to identify oneself as a researcher, so future researchers should incorporate this level of analysis to better understand research identity development.

Research Hypotheses

Even though not all research hypotheses were statistically significant, the results of the study provided an interesting picture of how mentoring and research self-efficacy are related. Having prior mentoring experience makes a difference in how important students' considered items on the Guidance subscale. Because these items are more closely related to research practices, this information can help inform mentoring relationships that center around this subscale. Furthermore, while no statistically significant results were found, the mean scores suggest that research self-efficacy is related to prior mentoring experience. Those reporting they had a mentor in the past had a higher research self-efficacy score than those reporting they had not had a mentor in the past. This should invigorate administrators, faculty, and staff to encourage mentoring relationships early in an academic career, especially before graduate school.

The most important finding in this study was that preferred mentoring style does make a difference in research self-efficacy. Those who preferred a mentoring style based on the Integrity subscale were more confident in research-oriented tasks than those that preferred a mentoring style based on Guidance. This connection is very important for mentors to understand. Those who value Integrity report that they do not prefer a relationship where emphasis is placed on guidance of tasks related to research and could possibly lead to a more developed research identity.

Limitations

This particular study was limited to graduate students enrolled in Ph.D. programs from 36 selected institutions. While the researcher attempted to obtain a national sample, it is not possible to generalize the findings due to the geographic distribution and sample

size. There is an overrepresentation of the southern region and research-intensive institutions. The fact that majority of participants come from a research-intensive institution may have also provided bias in assessing research self-efficacy.

Implications

Administrators, faculty, and staff may use the findings of this study to better understand how aspects of a mentoring relationship can aid in the confidence of research-oriented tasks. As Levinson (1978) expressed the importance of a mentoring relationship, faculty and staff should constantly encourage the development of such a relationship in graduate school. Ensuring that graduate students are forming any mentoring relationship means taking a step in the right direction to help these students with any type of skill development. Overall, most graduate students in this study were satisfied with their current mentor and most felt pretty confident in their research skills; therefore, one could assume that the presence of this type of relationship, on average, aids in the building of confidence among graduate students.

Graduate school can be an overwhelming process. Knowing the preferred mentoring characteristics of a graduate student is valuable information, and these preferences can inform how mentoring relationships are constructed within the graduate school environment, especially when graduate students have the opportunity to express their ideal relationship. Using a scale like the *IMS* can provide mentors with a starting place on how to build a strategic plan for a mentoring relationship, allowing the mentee to realize their maximum potential while under faculty or staff guidance. If every entering doctoral student took an assessment regarding their mentoring preferences, graduate students would not only be forced to think about mentoring relationships, but

faculty and staff could intervene early depending on what information is provided by the assessment. Doctoral students often find too late in the game that mentoring relationships can really help in developing their skills, especially when it comes to research.

Confidence is a main component to building research skills, and without proper assessments, mentors can sometimes miss the mark in meeting the needs of mentees. Furthermore, graduate students often form relationships based on convenience rather than actual mentoring needs. Because this study provides evidence that preferred mentoring style makes a difference in research self-efficacy, this type of mentoring assessment could become vital to the building of a good relationship. A good match can play a role in a positive mentoring experience. Mentors can then use the results of the *IMS* to determine what areas their mentees value the most and help build confidence by mentoring within a positive environment. Faculty and staff can then use a measure like the *SERM* to determine if students are making progress in building up their researcher identity.

A common barrier to identifying oneself as a research is the ability to transition to independence (Gardner, 2008; Nyquist et al., 1999). Students that prefer a mentoring style centered on the concept Guidance are less confident than those that prefer a mentoring style centered on the concept Integrity. This could be attributed to the inability to transition to independence in research-oriented tasks. Mentors should look to this as a possible indicator in needing to focus on strategies to build independence, but more research would be needed in this area to establish concrete evidence. Administrators owe it to the advancement of the university to create an environment to develop better researchers, and starting with enhancing how graduate students are trained

can aid in that goal. Establishing the right mentoring relationships should always be included in that training.

Recommendations for Future Research

Based on the findings of this study, the researcher has noted recommendations for future research. These recommendations will not only further contribute to research on mentoring with graduate students, but they may also expand upon the current research to unearth new findings.

Because the sample size for this study was not ideal, the researcher recommends replicating the study to obtain a large sample size. This can be done by expanding the selection of institutions of higher education and lengthening the timeline of the study. Including more institutions may also help generalize the findings more by obtaining a national sample. A large sample size may improve the model fit, but if not, an Exploratory Factor Analysis should be conducted as well to determine which of the items on Rose's (2001) instrument should be included in the study.

In order to comprehend the depth of this research, a more comprehensive statistical analysis may be beneficial. Instead of just using MANOVA and ANOVA for statistical analysis, the researcher recommends running MANCOVA and ANCOVA analysis to account for possible covariates. This can be done by using demographic variables of the study.

In addition to a more complete statistical analysis, to gain a better understanding of the mentor cycle, future research should include mentors' perspectives of the mentoring relationship. Researchers often appear to take the one-sided approach due to various reasons, such as convenience, resources, and time constraints. However, in order

to better understand mentoring relationships, researchers should be analyzing both sides of the relationship. For this particular study, when looking at mentoring characteristics and research self-efficacy, it may be important to also look at what the mentor is contributing to that relationship. Their contributions may make a difference in how students feel about themselves, which could be considered a covariant factor.

Finally, this particular study analyzes research self-efficacy, which can be greatly impacted by the progress made in doctoral coursework, maturity, and exposure to the system. It would be interesting to conduct a similar study only analyzing doctoral students who are just entering a program, so as to create benchmark research for program administrators. This type of approach would allow administrations to conduct preliminary analysis. Administrators could then take this knowledge to help doctoral students identify the track best suited for the beginning skillset and create a more individualized doctoral experience for students.

Conclusion

As Levinson (1978) stated, the mentoring relationship is a necessary component to development as an adult. Markus and Nurius (1986) further theorized that the key to personal development is establishing idealized selves as something to work toward. This study sought to pull those concepts together and establish a connection between aspects of mentoring and confidence as a researcher. Graduate students should hope to become a more confident researcher, and they should seek support systems, such as mentoring relationships to aid in that goal. While this study did not produce a majority of significant findings, it did make a connection between preferred mentoring styles and research self-efficacy, as well as providing support for encouraging early mentoring

relationships. While mentoring relationships will always be personal and unique, the findings of this study can further contribute to how mentoring relationships can be formed and utilized to aid in student development.

APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 14112102
PROJECT TITLE: Preferred Mentoring Characteristics and Doctoral Students' Research Self - Efficacy
PROJECT TYPE: New Project
RESEARCHER(S): Ashley Johnston
COLLEGE/DIVISION: College of Education and Psychology
DEPARTMENT: Educational Studies and Research
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 01/22/2015 to 01/21/2016
Lawrence A. Hosman, Ph.D.
Institutional Review Board

APPENDIX B
INFORMED CONSENT

Introduction

This study attempts to collect information regarding mentoring preferences and research self-efficacy of doctoral students.

Procedures

You will be asked to complete a short demographic questionnaire and two questionnaires regarding mentoring preferences and research self-efficacy. The first questionnaire consists of demographic questions and will take approximately 3 minutes or less to complete. The second questionnaire consists of 34 questions regarding mentoring preferences and will take approximately 10 minutes or less to complete. The final questionnaire consists of 31 questions regarding research self-efficacy and will take approximately 10 minutes or less. The questionnaires will be conducted with an online Qualtrics-created survey.

Risks

There are no known risks (physical, psychological, financial, occupational, legal, social or other) associated with participation in this study. All data collected will be anonymous, confidential and secure.

Benefits

Participants can benefit from this study by examining mentoring practices associated with their graduate school experience. Participants will also have an opportunity to self-evaluate their research skill development at the current state of their program.

Confidentiality

All data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). All questionnaires will be concealed, and no one other than the primary investigator will have access to them. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by the primary investigator.

Participation

This study has been reviewed by the Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the IRB at 601.266.5997. Participation in this project is completely voluntary, and participants may withdraw from this study at any time without penalty or prejudice. If you choose to withdraw once you begin, simply close your browser.

Consent to Participate

By submitting this questionnaire, you give consent to participate in this research study. Remember all information is confidential and secure. If you have any questions about the questionnaires or how the data will be used, please contact Ashley Johnston at 504.756.2457 or Ashley.Johnston@usm.edu.

APPENDIX C

DEMOGRAPHIC QUESTIONNAIRE

1. Sex:
    a. Male
    b. Female

2. Age: _____

3. Race/Ethnicity
    a. Asian
    b. Black/African American
    c. White/Non-Hispanic
    d. Latino/Hispanic
    e. Native American
    f. Multiracial
    g. Other _____

4. Institution (please do not abbreviate): _____

5. Name of doctoral program: _____

6. What is your enrollment status?
    a. Full-time
    b. Part-time

7. Number of years completed in doctoral program: _____

8. Number of research courses completed (doctoral level): _____

9. Have you previously had a mentor?
    a. Yes
    b. No

10. Please choose the following statement that best describes your experiences with mentoring?
    a. I have not had a mentor in the past, nor do I currently have a mentor.
    b. I have had a mentor in the past, but I do not currently have a mentor.
    c. I have had a mentor in the past, and I currently have a mentor.
    d. I have not had a mentor in the past, but I do currently have a mentor.

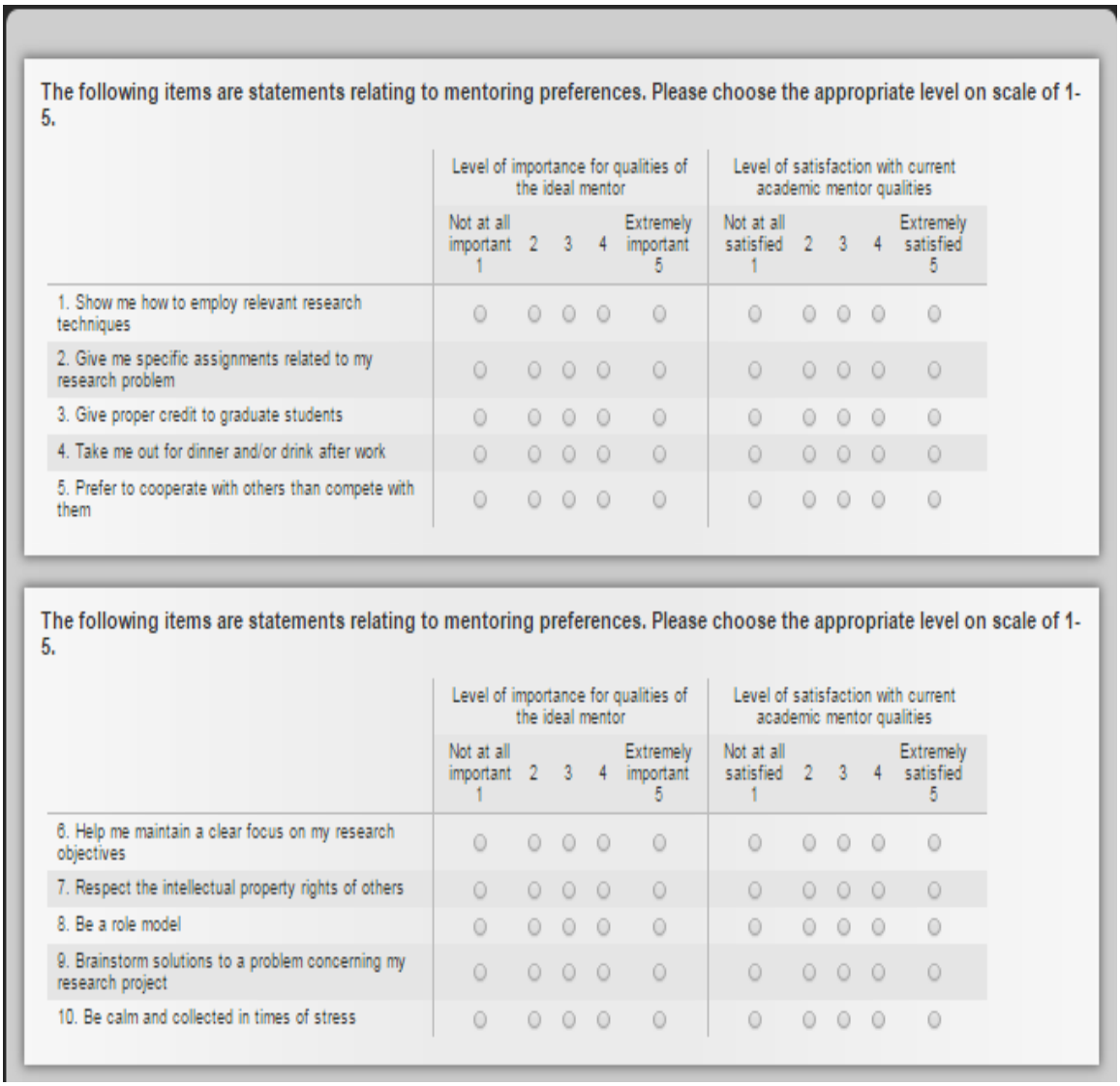
If options C or D are selected from the previous question, the following question will pop up:

11. Please indicate the type of mentor you have currently (check all that apply)
    a. Academic
    b. Personal
    c. Professional
    d. Other _____

APPENDIX D

MODIFIED IDEAL MENTOR SCALE

Participants were shown column with satisfaction scale only if they indicated they currently had an academic mentor.



The following items are statements relating to mentoring preferences. Please choose the appropriate level on scale of 1-5.

	Level of importance for qualities of the ideal mentor					Level of satisfaction with current academic mentor qualities				
	Not at all important 1	2	3	4	Extremely important 5	Not at all satisfied 1	2	3	4	Extremely satisfied 5
1. Show me how to employ relevant research techniques	○	○	○	○	○	○	○	○	○	○
2. Give me specific assignments related to my research problem	○	○	○	○	○	○	○	○	○	○
3. Give proper credit to graduate students	○	○	○	○	○	○	○	○	○	○
4. Take me out for dinner and/or drink after work	○	○	○	○	○	○	○	○	○	○
5. Prefer to cooperate with others than compete with them	○	○	○	○	○	○	○	○	○	○

The following items are statements relating to mentoring preferences. Please choose the appropriate level on scale of 1-5.

	Level of importance for qualities of the ideal mentor					Level of satisfaction with current academic mentor qualities				
	Not at all important 1	2	3	4	Extremely important 5	Not at all satisfied 1	2	3	4	Extremely satisfied 5
6. Help me maintain a clear focus on my research objectives	○	○	○	○	○	○	○	○	○	○
7. Respect the intellectual property rights of others	○	○	○	○	○	○	○	○	○	○
8. Be a role model	○	○	○	○	○	○	○	○	○	○
9. Brainstorm solutions to a problem concerning my research project	○	○	○	○	○	○	○	○	○	○
10. Be calm and collected in times of stress	○	○	○	○	○	○	○	○	○	○

The following items are statements relating to mentoring preferences. Please choose the appropriate level on scale of 1-5.

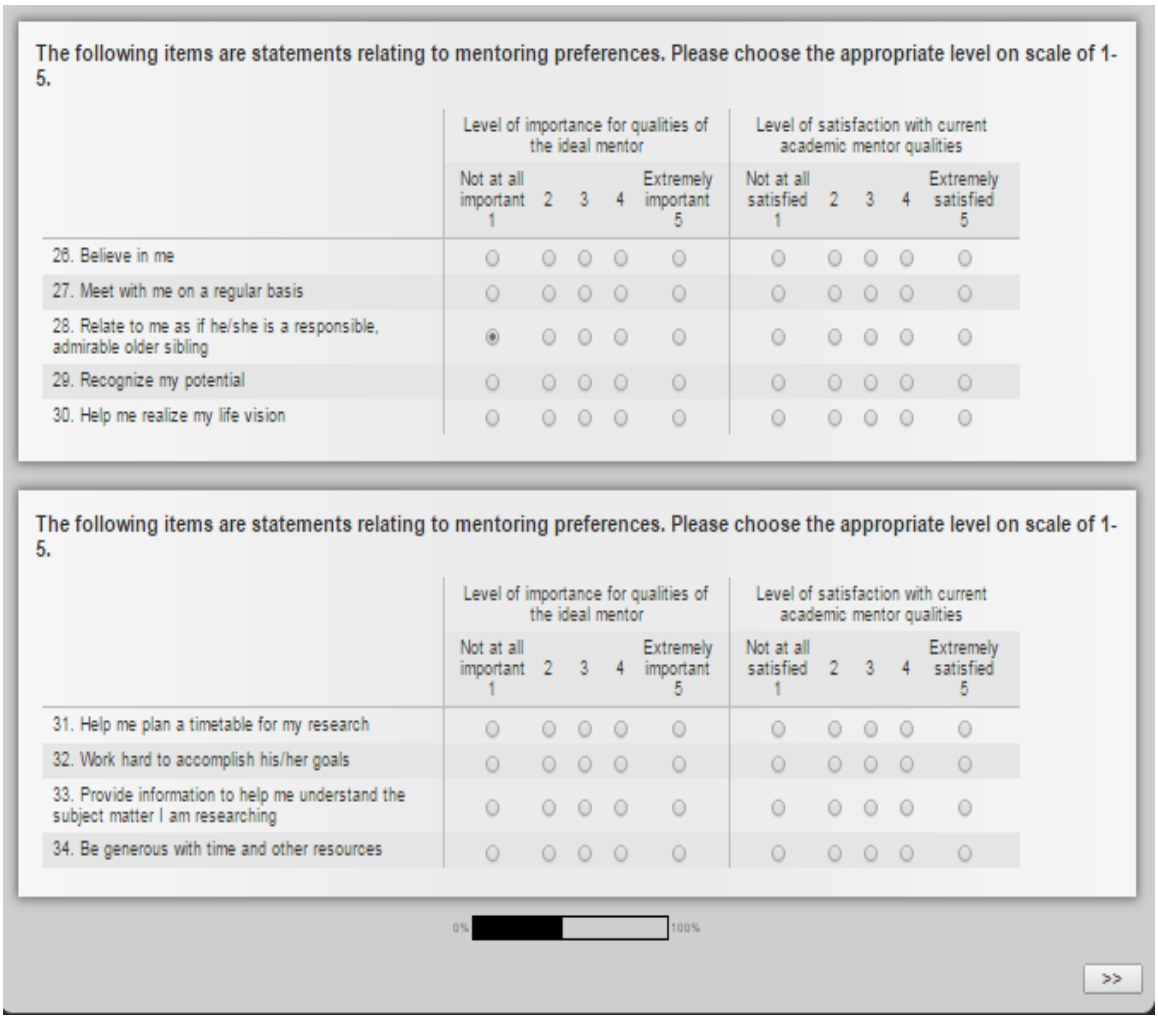
	Level of importance for qualities of the ideal mentor					Level of satisfaction with current academic mentor qualities				
	Not at all important 1	2	3	4	Extremely important 5	Not at all satisfied 1	2	3	4	Extremely satisfied 5
11. Be interested in speculating on the nature of the universe or the human condition	○	○	○	○	○	○	○	○	○	○
12. Treat me as an adult who has a right to be involved in decisions that affect me	○	○	○	○	○	○	○	○	○	○
13. Help me plan the outline for a presentation of my research	○	○	○	○	○	○	○	○	○	○
14. Inspire me by his or her example and words	○	○	○	○	○	○	○	○	○	○
15. Rarely feel fearful or anxious	○	○	○	○	○	○	○	○	○	○

The following items are statements relating to mentoring preferences. Please choose the appropriate level on scale of 1-5.

	Level of importance for qualities of the ideal mentor					Level of satisfaction with current academic mentor qualities				
	Not at all important 1	2	3	4	Extremely important 5	Not at all satisfied 1	2	3	4	Extremely satisfied 5
16. Help me investigate a problem I am having with research design	○	○	○	○	○	○	○	○	○	○
17. Accept me as a junior colleague	○	○	○	○	○	○	○	○	○	○
18. Be seldom sad or depressed	○	○	○	○	○	○	○	○	○	○
19. Advocate for my needs and interests	○	○	○	○	○	○	○	○	○	○
20. Talk to me about his or her personal problems	○	○	○	○	○	○	○	○	○	○

The following items are statements relating to mentoring preferences. Please choose the appropriate level on scale of 1-5.

	Level of importance for qualities of the ideal mentor					Level of satisfaction with current academic mentor qualities				
	Not at all important 1	2	3	4	Extremely important 5	Not at all satisfied 1	2	3	4	Extremely satisfied 5
21. Generally try to be thoughtful and considerate	○	○	○	○	○	○	○	○	○	○
22. Be a cheerful, high-spirited person	○	○	○	○	○	○	○	○	○	○
23. Value me as a person	○	○	○	○	○	○	○	○	○	○
24. Have coffee or lunch with me on occassion	○	○	○	○	○	○	○	○	○	○
25. Keep his or her work space neat and clean	○	○	○	○	○	○	○	○	○	○



The following items are statements relating to mentoring preferences. Please choose the appropriate level on scale of 1-5.

	Level of importance for qualities of the ideal mentor					Level of satisfaction with current academic mentor qualities				
	Not at all important 1	2	3	4	Extremely important 5	Not at all satisfied 1	2	3	4	Extremely satisfied 5
26. Believe in me	○	○	○	○	○	○	○	○	○	○
27. Meet with me on a regular basis	○	○	○	○	○	○	○	○	○	○
28. Relate to me as if he/she is a responsible, admirable older sibling	◉	○	○	○	○	○	○	○	○	○
29. Recognize my potential	○	○	○	○	○	○	○	○	○	○
30. Help me realize my life vision	○	○	○	○	○	○	○	○	○	○

The following items are statements relating to mentoring preferences. Please choose the appropriate level on scale of 1-5.

	Level of importance for qualities of the ideal mentor					Level of satisfaction with current academic mentor qualities				
	Not at all important 1	2	3	4	Extremely important 5	Not at all satisfied 1	2	3	4	Extremely satisfied 5
31. Help me plan a timetable for my research	○	○	○	○	○	○	○	○	○	○
32. Work hard to accomplish his/her goals	○	○	○	○	○	○	○	○	○	○
33. Provide information to help me understand the subject matter I am researching	○	○	○	○	○	○	○	○	○	○
34. Be generous with time and other resources	○	○	○	○	○	○	○	○	○	○

0% 100%

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APPENDIX E

SELF-EFFICACY IN RESEARCH MEASURE (PHILLIPS & RUSSELL, 1994)

The following Items are tasks related to research. Please indicate your degree of confidence in your ability to successfully accomplish each of the following tasks on a scale from 0-9 with 0 representing no confidence and 9 representing total confidence.

	Degree of Confidence									
	0	1	2	3	4	5	6	7	8	9
1. Selecting a suitable topic for study	○	○	○	○	○	○	○	○	○	○
2. Knowing which statistics to use	○	○	○	○	○	○	○	○	○	○
3. Getting an adequate number of subjects	○	○	○	○	○	○	○	○	○	○
4. Writing a research presentation for a conference	○	○	○	○	○	○	○	○	○	○
5. Writing the method and results sections for a research paper for publication	○	○	○	○	○	○	○	○	○	○

The following Items are tasks related to research. Please indicate your degree of confidence in your ability to successfully accomplish each of the following tasks on a scale from 0-9 with 0 representing no confidence and 9 representing total confidence.

	Degree of Confidence									
	0	1	2	3	4	5	6	7	8	9
6. Manipulating data to get it onto a computer system	○	○	○	○	○	○	○	○	○	○
7. Writing a discussion section for a thesis or dissertation	○	○	○	○	○	○	○	○	○	○
8. Keeping records during a research project	○	○	○	○	○	○	○	○	○	○
9. Collecting data	○	○	○	○	○	○	○	○	○	○

The following Items are tasks related to research. Please indicate your degree of confidence in your ability to successfully accomplish each of the following tasks on a scale from 0-9 with 0 representing no confidence and 9 representing total confidence.

	Degree of Confidence									
	0	1	2	3	4	5	6	7	8	9
10. Designing an experiment using non-traditional methods (e.g., ethnographic, cybernetic, phenomenological approaches)	○	○	○	○	○	○	○	○	○	○
11. Designing an experiment using traditional methods (e.g., experimental, quasi-experimental design)	○	○	○	○	○	○	○	○	○	○
12. Making time for research	○	○	○	○	○	○	○	○	○	○
13. Writing the introduction and literature review for a dissertation	○	○	○	○	○	○	○	○	○	○
14. Reviewing the literature in an area of research interest	○	○	○	○	○	○	○	○	○	○

The following Items are tasks related to research. Please indicate your degree of confidence in your ability to successfully accomplish each of the following tasks on a scale from 0-9 with 0 representing no confidence and 9 representing total confidence.

	Degree of Cofidence									
	0	1	2	3	4	5	6	7	8	9
15. Writing the introduction and discussion sections for a research paper for publication	○	○	○	○	○	○	○	○	○	○
16. Contacting researchers currently working in an area of research interest	○	○	○	○	○	○	○	○	○	○
17. Avoiding the violation of statistical assumptions	○	○	○	○	○	○	○	○	○	○
18. Writing the method and results section of a dissertation	○	○	○	○	○	○	○	○	○	○
19. Using simple statistics (e.g., t-test, ANOVA, correlation, etc)	○	○	○	○	○	○	○	○	○	○

The following Items are tasks related to research. Please indicate your degree of confidence in your ability to successfully accomplish each of the following tasks on a scale from 0-9 with 0 representing no confidence and 9 representing total confidence.

	Degree of Confidence									
	0	1	2	3	4	5	6	7	8	9
20. Writing the introduction and literature for a thesis	○	○	○	○	○	○	○	○	○	○
21. Controlling for threats to validity	○	○	○	○	○	○	○	○	○	○
22. Formulating hypotheses	○	○	○	○	○	○	○	○	○	○
23. Writing the method and results sections of a thesis	○	○	○	○	○	○	○	○	○	○
24. Utilizing resources for needed help	○	○	○	○	○	○	○	○	○	○

The following Items are tasks related to research. Please indicate your degree of confidence in your ability to successfully accomplish each of the following tasks on a scale from 0-9 with 0 representing no confidence and 9 representing total confidence.

	Degree of Confidence									
	0	1	2	3	4	5	6	7	8	9
25. Understanding computer printouts	○	○	○	○	○	○	○	○	○	○
26. Defending a thesis or dissertation	○	○	○	○	○	○	○	○	○	○
27. Using multivariate statistics (e.g., multiple regression, factor analysis, etc.)	○	○	○	○	○	○	○	○	○	○
28. Using statistical packages (e.g., SPSS-X, SAS, etc.)	○	○	○	○	○	○	○	○	○	○
29. Selecting a sample of subjects from a given population	○	○	○	○	○	○	○	○	○	○

The following Items are tasks related to research. Please indicate your degree of confidence in your ability to successfully accomplish each of the following tasks on a scale from 0-9 with 0 representing no confidence and 9 representing total confidence.

	Degree of Confidence									
	0	1	2	3	4	5	6	7	8	9
30. Selecting reliable and valid instruments	○	○	○	○	○	○	○	○	○	○
31. Writing statistical computer programs	○	○	○	○	○	○	○	○	○	○
32. Getting money to help pay for research	○	○	○	○	○	○	○	○	○	○
33. Operationalizing variables of interest	○	○	○	○	○	○	○	○	○	○

0% 100%

>>

APPENDIX F

ELECTRONIC INVITATION TO PARTICIPATE

Dear Sir/Madam,

My name is Ashley Johnston, and I am a doctoral candidate working on the final phase of my dissertation. My project is titled, "Preferred Mentoring Characteristics and Doctoral Students' Research Self – Efficacy", and I am seeking participation from graduate students enrolled in doctoral programs. Your academic institution has been identified as a candidate, and it is my hope that you will share this opportunity for participation with your doctoral students.

The quantitative study consists of three questionnaires that should take no longer than approximately 25 minutes to complete. All data collected will be kept confidential, and participation is completely voluntary. This study has been reviewed by the Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the IRB at The University of Southern Mississippi at (601) 266 – 5997.

If you agree to forward this opportunity to your students, they can access the questionnaires through the following link:

Preferred Mentoring Characteristics and Doctoral Students' Research Self-Efficacy

The questionnaires can be completed online. Feel free to contact me regarding any questions or concerns of this study. I can be reached at (504) 756 – 2457 or Ashley.Johnston@usm.edu. If you do not wish to forward this to your students, I do thank you for taking the time out to consider the opportunity.

Best Regards,

Ashley Johnston, M.Ed.
Doctoral Candidate
Department of Educational Studies and Research
The University of Southern Mississippi
Ashley.Johnston@usm.edu
(504) 756-2457

APPENDIX G

MEAN SCORES FOR IDEAL MENTOR SCALE: INTEGRITY SUBSCALE

Descriptive Statistics

	N	Mean	Std. Deviation
3. Give proper credit to graduate students	125	4.24	1.011
5. Prefer to cooperate with others than compete with them	125	4.33	.886
7. Respect the intellectual property rights of others	125	4.42	.960
8. Be a role model	125	4.35	.862
10. Be calm and collected in times of stress	125	4.38	.736
12. Treat me as an adult who has a right to be involved in decisions that affect me	125	4.76	.477
14. Inspire me by his or her example and words	125	4.11	.909
17. Accept me as a junior colleague	125	4.13	.942
19. Advocate for my needs and interests	125	4.48	.757
21. Generally try to be thoughtful and considerate	125	4.38	.703
23. Value me as a person	125	4.55	.711
26. Believe in me	125	4.63	.602
29. Recognize my potential	125	4.46	.701
32. Work hard to accomplish his/her goals	125	4.20	.898
Valid N (listwise)	125		

APPENDIX H

MEAN SCORES FOR IDEAL MENTOR SCALE: GUIDANCE SUBSCALE

Descriptive Statistics

	N	Mean	Std. Deviation
1. Show me how to employ relevant research techniques	125	4.47	.756
2. Give me specific assignments related to my research problem	125	3.65	1.205
6. Help me maintain a clear focus on my research objectives	125	4.69	.614
9. Brainstorm solutions to a problem concerning my research project	125	4.48	.713
13. Help me plan the outline for a presentation of my research	125	3.90	1.146
16. Help me investigate a problem I am having with research design	125	4.46	.756
27. Meet with me on a regular basis	125	4.15	.916
31. Help me plan a timetable for my research	125	4.40	.851
33. Provide information to help me understand the subject matter I am researching	125	4.28	.894
34. Be generous with time and other resources	125	4.08	.895
Valid N (listwise)	125		

APPENDIX I

MEAN SCORES FOR IDEAL MENTOR SCALE: RELATIONSHIP SUBSCALE

Descriptive Statistics

	N	Mean	Std. Deviation
4. Take me out for dinner and/or drink after work	125	1.77	1.076
11. Be interested in speculating on the nature of the universe or the human condition	125	2.97	1.244
15. Rarely feel fearful or anxious	125	3.50	1.201
18. Be seldom sad or depressed	125	2.78	1.202
20. Talk to me about his or her personal problems	125	1.83	.965
22. Be a cheerful, high-spirited person	125	3.35	1.055
24. Have coffee or lunch with me on occassion	125	2.58	1.290
25. Keep his or her work space neat and clean	125	2.13	1.157
28. Relate to me as if he/she is a responsible, admirable older sibling	125	2.49	1.273
30. Help me realize my life vision	125	3.62	1.133
Valid N (listwise)	125		

APPENDIX J

MEAN SCORES FOR MODIFIED IDEAL MENTOR SCALE – SATISFACTION WITH CURRENT MENTOR: INTEGRITY SUBSCALE

Descriptive Statistics

	N	Mean	Std. Deviation
3. Give proper credit to graduate students	77	4.49	.851
5. Prefer to cooperate with others than compete with them	77	4.18	1.009
7. Respect the intellectual property rights of others	77	4.65	.774
8. Be a role model	77	4.18	1.167
10. Be calm and collected in times of stress	77	4.47	.995
12. Treat me as an adult who has a right to be involved in decisions that affect me	77	4.51	.853
14. Inspire me by his or her example and words	77	4.14	1.097
17. Accept me as a junior colleague	77	4.17	1.006
19. Advocate for my needs and interests	77	4.19	1.085
21. Generally try to be thoughtful and considerate	77	4.28	1.047
23. Value me as a person	77	4.37	.916
26. Believe in me	77	4.27	1.044
29. Recognize my potential	77	4.27	.910
32. Work hard to accomplish his/her goals	77	4.27	.980
Valid N (listwise)	77		

APPENDIX K

MEAN SCORES FOR MODIFIED IDEAL MENTOR SCALE – SATISFACTION WITH CURRENT MENTOR: GUIDANCE SUBSCALE

Descriptive Statistics

	N	Mean	Std. Deviation
1. Show me how to employ relevant research techniques	77	3.84	1.089
2. Give me specific assignments related to my research problem	77	3.81	1.121
6. Help me maintain a clear focus on my research objectives	77	4.17	1.163
9. Brainstorm solutions to a problem concerning my research project	77	4.10	1.131
13. Help me plan the outline for a presentation of my research	77	3.94	1.116
16. Help me investigate a problem I am having with research design	77	4.08	1.145
27. Meet with me on a regular basis	77	4.11	1.033
31. Help me plan a timetable for my research	77	3.99	1.166
33. Provide information to help me understand the subject matter I am researching	77	3.95	1.235
34. Be generous with time and other resources	77	4.15	1.073
Valid N (listwise)	77		

APPENDIX L

MEAN SCORES FOR MODIFIED IDEAL MENTOR SCALE – SATISFACTION WITH CURRENT MENTOR: RELATIONSHIP SUBSCALE

Descriptive Statistics

	N	Mean	Std. Deviation
4. Take me out for dinner and/or drink after work	77	3.57	1.370
11. Be interested in speculating on the nature of the universe or the human condition	77	3.95	1.191
15. Rarely feel fearful or anxious	77	4.14	1.144
18. Be seldom sad or depressed	77	4.23	1.009
20. Talk to me about his or her personal problems	77	3.98	1.181
22. Be a cheerful, high-spirited person	77	4.14	1.044
24. Have coffee or lunch with me on occassion	77	4.05	1.176
25. Keep his or her work space neat and clean	77	4.19	1.048
28. Relate to me as if he/she is a responsible, admirable older sibling	77	3.92	1.145
30. Help me realize my life vision	77	4.08	1.011
Valid N (listwise)	77		

APPENDIX M

MEAN SCORES FOR SELF-EFFICACY IN RESEARCH MEASURE

Descriptive Statistics

	N	Mean	Std. Deviation
1. Selecting a suitable topic for study	125	8.15	1.704
2. Knowing which statistics to use	125	6.72	2.271
3. Getting an adequate number of subjects	125	7.53	1.986
4. Writing a research presentation for a conference	125	8.06	1.753
5. Writing the method and results sections for a research paper for publication	125	7.69	1.880
6. Manipulating data to get it onto a computer system	125	7.41	2.412
7. Writing a discussion section for a thesis or dissertation	125	7.60	1.953
8. Keeping records during a research project	125	8.28	1.758
9. Collecting data	125	8.49	1.686
10. Designing an experiment using non-traditional methods (e.g., ethnographic, cybernetic, phenomenological approaches)	125	5.83	2.768
11. Designing an experiment using traditional methods (e.g., experimental, quasi-experimental design)	125	7.34	2.137
12. Making time for research	125	7.35	2.100
13. Writing the introduction and literature review for a dissertation	125	7.93	1.882
14. Reviewing the literature in an area of research interest	125	8.51	1.601
15. Writing the introduction and discussion sections for a research paper for publication	125	7.71	1.962

16. Contacting researchers currently working in an area of research interest	125	7.24	2.259
17. Avoiding the violation of statistical assumptions	125	6.56	2.479
18. Writing the method and results section of a dissertation	125	7.35	2.227
19. Using simple statistics (e.g., t-test, ANOVA, correlation, etc)	125	7.35	2.419
20. Writing the introduction and literature for a thesis	125	8.04	1.807
21. Controlling for threats to validity	125	6.91	2.202
22. Formulating hypotheses	125	7.72	1.865
23. Writing the method and results sections of a thesis	125	7.52	2.059
24. Utilizing resources for needed help	125	8.04	1.648
25. Understanding computer printouts	125	7.63	2.161
26. Defending a thesis or dissertation	125	7.20	2.290
27. Using multivariate statistics (e.g., multiple regression, factor analysis, etc.)	125	6.21	2.603
28. Using statistical packages (e.g., SPSS-X, SAS, etc.)	125	6.46	2.748
29. Selecting a sample of subjects from a given population	125	7.23	2.357
30. Selecting reliable and valid instruments	125	7.35	2.218
31. Writing statistical computer programs	125	4.22	2.945
32. Getting money to help pay for research	125	5.00	2.478
33. Operationalizing variables of interest	125	6.16	2.584
Valid N (listwise)	125		

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